

# University of Rhode Island

## 2007-08 CATALOG

Undergraduate and Graduate  
2007-08 Academic Year Catalog

Office of Undergraduate Admission  
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### Find more online...

To see information on course offerings by semester, schedule, or instructor, please log on to e-Campus and click on "Search for Classes."

You can also find descriptions of available URI scholarships, loan funds, and awards, only in the online catalog at [uri.edu/catalog](http://uri.edu/catalog).



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*The University of Rhode Island is committed to the principles of affirmative action and the attainment of equal employment and equal educational opportunities for all qualified individuals. For further information, please contact the Affirmative Action Office at 401-874-2442.*

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# 2007–2008 UNIVERSITY CALENDAR

*This calendar applies to undergraduate and graduate students enrolled at URI's Kingston and Providence Campuses.  
For dates specific to candidates for graduate degrees, see pages 118–119.*

## Fall Semester 2007

Labor Day, no classes,  
offices closed

Sept. 3

Advising Day

Sept. 4

Classes begin

Sept. 5

Last day to drop  
"early drop" courses

Sept. 14

Last day to add courses  
and pass/fail option

Sept. 18

Columbus Day,  
no classes, offices closed

Oct. 8

Monday classes meet,  
Wednesday, Oct. 10

Midsemester and last day  
for students to change  
from pass/fail option

Oct. 22

Midterm grades for  
freshmen due in  
e-Campus

Oct. 23

Last day for students to  
drop courses

Oct. 30

Veteran's Day,  
classes do not meet,  
offices closed

Nov. 12

Thanksgiving recess,  
no classes

Nov. 22–25

Classes end

Dec. 10

Reading days

Dec. 11–12

Final examinations

Dec. 13–14, 17–21

Final examinations

Make-up day

Dec. 22

Final grades due in  
e-Campus by 5 p.m.

Dec. 26

Official date for

December graduation

Dec. 31

Midterm grades for freshmen  
due in e-Campus

March 10

Spring break,  
no classes, offices open

March 17–23

Last day for students to  
drop courses

March 24

Classes end

April 29

Reading days

April 30, May 1

Final examinations

May 2, 5–9, 12

Final grades due in  
e-Campus

May 15, by 5 p.m.

Graduate Commencement  
May 17

Commencement  
May 18

## Spring Semester 2008

Advising Day

Jan. 22

Classes begin

Jan. 23

Last day to drop

"early drop" courses

Jan. 31

Last day to add courses  
and pass/fail option

Feb. 4

Midsemester and last day  
for students to change  
from pass/fail option

March 7

## Summer Session 2008

Term I  
May 19–June 20

Term II  
June 23–July 25

*In case of major storms or other  
circumstances, changes may be made in  
the academic calendar when it is in the  
best interest of the institution, without  
prior notice to students.*

# THE UNIVERSITY



The University of Rhode Island is a medium-sized state university with its primary campus in the southern part of Rhode Island in the village of Kingston. In part because of its unique location near the ocean and six miles from Narragansett Bay, the University has developed strong marine programs and has been designated a national Sea Grant institution.

The University enrolls about 12,400 undergraduate and 2,600 graduate students, and has a full-time tenure-track teaching faculty of approximately 600.

**Mission.** The University of Rhode Island is the State's public learner-centered research university. We are a community joined in a common quest for knowledge. The University is committed to enriching the lives of its students through its land, sea, and urban grant traditions. URI is the only public institution in Rhode Island offering undergraduate, graduate, and professional students the distinctive educational opportunities of a major research university. Our undergradu-

ate, graduate, and professional education, research, and outreach serve Rhode Island and beyond. Students, faculty, staff, and alumni are united in one common purpose: to learn and lead together. Embracing Rhode Island's heritage of independent thought, we value:

- Creativity and Scholarship
- Diversity, Fairness, and Respect
- Engaged Learning and Civic Involvement
- Intellectual and Ethical Leadership

**Campuses.** The University has a spacious rural campus 30 miles south of Providence in the northeast metropolitan corridor between New York and Boston. The center of campus is a quadrangle of handsome, old granite buildings surrounded by newer academic buildings, student residence halls, and fraternity and sorority houses. On the plain below Kingston Hill are gymnasiums, athletic fields, tennis courts, a freshwater pond, agricultural fields, and the University's Thomas M. Ryan Center.

In addition to the Kingston Campus, the University has three other campuses. The Feinstein Providence Campus houses the Alan Shawn Feinstein College of Continuing Education (ASFCE), the University's biotechnology manufacturing program, and the new "Admission Option" for incoming traditional-aged freshmen. The Narragansett Bay Campus, six miles to the east of the Kingston campus, overlooks the West Passage of Rhode Island's prized bay and is the site of URI's Graduate School of Oceanography. In the western part of Rhode Island, just 20 miles from Kingston, is URI's W. Alton Jones Campus; its 2,300 acres of woods, fields, streams, and ponds are the site of environmental education, research, and conference facilities.

**History.** The University was chartered as the state's agricultural school in 1888. The Oliver Watson farm was purchased as a site for the school, and the old farmhouse, now restored, still stands on the campus. The school became the Rhode Island College of Agriculture and Mechanic Arts in 1892, and the first class of 17 members was graduated two years later.

The Morrill Act of 1862 provided for the sale of public lands. Income from these sales was to be used to create at least one college in each state with the principal purpose of teaching agriculture and mechanic arts. From this grant of land comes the term "land grant," which applied to the national system of state colleges. In a later adapta-

tion of the concept, federal funds given to colleges for marine research and extension are called "sea grants."

In 1909 the name of the college was changed to Rhode Island State College, and the program of study was revised and expanded. In 1951 the college became the University of Rhode Island by an act of the General Assembly. The Board of Governors for Higher Education appointed by the governor became the governing body of the University in 1981. A historical timeline can be found at the end of this catalog.

## Programs of Study

**Undergraduate Study.** All programs aim at a balance of studies of the natural and social sciences, the humanities, and professional subjects. The courses and programs of study have been approved by national accrediting agencies and are accepted for credit by other approved institutions of higher education (see page 9).

Undergraduate students can earn the following degrees at URI:

Bachelor of Arts  
Bachelor of Science  
Bachelor of Fine Arts  
Bachelor of Landscape Architecture  
Bachelor of Music  
Bachelor of General Studies (Feinstein College of Continuing Education only)

URI's College of Pharmacy also offers a six-year entry-level program, leading to the Pharm.D. degree.

All Kingston freshmen who enter the University to earn a bachelor's degree are first enrolled in University College. All undergraduates at the University, whether at our Kingston or Providence campuses, have a wide choice of programs from which to choose a major, and our advising programs provide help in making this important decision and in choosing appropriate courses.

**Graduate Study.** Graduate study at the University was inaugurated in 1907 with Master of Science degrees in chemistry and engineering. The Master of Arts degree was first awarded in 1951, and in 1960 the

University awarded its first Doctor of Philosophy degree. Graduate work for professional degrees was initiated in 1962, when the degree of Master of Public Administration was first awarded. Today, the master's degree is offered in 48 areas of study and the doctorate in 36 areas. To date, over 19,040 master's degrees and 2,390 doctoral degrees have been conferred. Students may earn the following degrees:

Master of Arts  
Master of Science  
Master of Business Administration  
Master of Environmental Science and Management  
Master of Library and Information Studies  
Master of Marine Affairs  
Master of Music  
Master of Oceanography  
Master of Public Administration  
Doctor of Philosophy  
Doctor of Physical Therapy

The University also offers two joint programs with Roger Williams University, the M.S./J.D. in labor relations and human resources, and the M.M.A./J.D. in marine affairs. Additionally, the University cooperates with Rhode Island College in offering a joint Ph.D. degree in education.

The Graduate School has primary responsibility for administering policies and procedures relating to advanced study at URI. Graduate School policy is formulated by graduate faculty members, acting through their delegate body, the Graduate Council, which includes student members. Only the Graduate School or the Graduate Council can grant exceptions to the regulations for graduate study, which are explained in detail in the "Graduate Programs" section.

The University's graduate programs of study are listed on the following page. Study and research in a combination of special areas is often possible, and some graduate programs actively encourage collaborative multidisciplinary work. Specific mention of these opportunities is included in individual program descriptions. Graduate-level course work applicable to

a number of programs is offered in several locations throughout the state by the Alan Shawn Feinstein College of Continuing Education. In most cases, however, a portion of the courses must be taken on the Kingston Campus.

Students with a bachelor's degree from URI or another university with equivalent requirements and accreditation may be admitted for graduate study, providing their credentials meet the standards set by the Graduate School and the department in which they wish to study, and that facilities for study are available in their field of interest. Among the standards required for admission are an approximate undergraduate average of B or better and, where required, satisfactory scores on a nationally administered examination.

## Educational Outcomes

The University of Rhode Island expects that every academic program, as a consequence of the interaction between general education and a major, will lead the student to

- think critically in order to solve problems and question the nature and sources of authority;
- use the methods and materials characteristic of each of the knowledge areas while understanding their interconnectedness;
- commit to intellectual curiosity and lifelong learning;
- maintain an openness to new ideas while utilizing the social skills necessary for both teamwork and leadership; and
- think independently, be self-directed, and take initiative based on informed choices.

For a statement of the expected outcomes of general education, see page 33. For a comprehensive set of statements regarding the expected outcomes of each college and major, visit [uri.edu/assessment](http://uri.edu/assessment).

## Undergraduate Degrees

### College of Arts and Sciences

African and African-American Studies  
*(joint URI-RIC):* B.A.  
 Anthropology: B.A.  
 Art: B.A., B.F.A.  
 Art History: B.A.  
 Chemistry: B.A., B.S.  
 Chemistry and Chemical  
 Oceanography: B.S.  
 Chemistry and Forensic Chemistry: B.S.  
 Classical Studies: B.A.  
 Communication Studies: B.A.  
 Comparative Literature Studies: B.A.  
 Computer Science: B.A., B.S.  
 Economics: B.A., B.S.  
 English: B.A.  
 Film Media: B.A.  
 French: B.A.  
 German: B.A.  
 History: B.A.  
 Italian: B.A.  
 Journalism: B.A.  
 Latin American Studies: B.A.  
 Mathematics: B.A., B.S.  
 Music: B.A.  
 Music Composition: B.M.  
 Music Education: B.M.

Music Performance: B.M.  
 Philosophy: B.A.  
 Physics: B.A., B.S.  
 Physics and Physical Oceanography: B.S.  
 Political Science: B.A.  
 Psychology: B.A.  
 Public Relations: B.A.  
 Sociology: B.A., B.S.  
 Spanish: B.A.  
 Theatre: B.F.A.  
 Women's Studies: B.A.  
 Writing and Rhetoric: B.A.

### College of Business Administration

Accounting: B.S.  
 Entrepreneurship Management: B.S.  
 Finance: B.S.  
 General Business Administration: B.S.  
 International Business: B.S.  
 Management Information Systems: B.S.\*  
 Marketing: B.S.  
 Supply Chain Management: B.S.

### Alan Shawn Feinstein College of Continuing Education

Bachelor of General Studies: B.G.S.

### College of Engineering

Biomedical Engineering: B.S.  
 Chemical Engineering: B.S.  
 Chemical and Ocean Engineering: B.S.  
 Civil Engineering: B.S.  
 Computer Engineering: B.S.  
 Electrical Engineering: B.S.  
 Industrial Engineering: B.S.  
 Mechanical Engineering: B.S.  
 Ocean Engineering: B.S.

### College of the Environment and Life Sciences

Animal Science and Technology: B.S.  
 Aquaculture and Fishery Technology: B.S.  
 Biological Sciences: B.S.  
 Biology: B.A.  
 Clinical Laboratory Science: B.S.  
 Environmental Economics and  
 Management: B.S.  
 Environmental Horticulture and Turfgrass  
 Management: B.S.  
 Environmental Science and  
 Management: B.S.  
 Geology and Geological  
 Oceanography: B.S.  
 Geosciences: B.S.

Landscape Architecture: B.L.A.  
 Marine Affairs: B.A., B.S.  
 Marine Biology: B.S.  
 Microbiology: B.S.  
 Nutrition and Dietetics: B.S.  
 Resource Economics and Commerce: B.S.  
 Wildlife and Conservation Biology: B.S.

### College of Human Science and Services

Communicative Disorders: B.S.  
 Dental Hygiene (*joint URI-CCRI or  
 post-clinical*): B.S.\*  
 Education: Elementary B.A.  
 Secondary B.A., B.S.  
 Human Development and  
 Family Studies: B.S.  
 Human Science and Services: B.S.\*  
 Kinesiology: B.S.  
 Textile Marketing: B.S.  
 Textiles, Fashion Merchandising, and  
 Design: B.S.

### College of Nursing

Nursing: B.S.

### College of Pharmacy

Pharm.D. (six-year entry level)

\* This degree program is no longer open to incoming students.

## Graduate Degrees

### Master of Arts

Communication Studies  
 Education  
 English  
 History  
 Marine Affairs  
 Political Science  
 Spanish

### Master of Science

Accounting  
 Biological Sciences  
 Cell and Molecular Biology  
 Chemical Engineering \*\*  
 Chemistry  
 Civil and Environmental Engineering \*\*  
 Clinical Laboratory Science  
 Computer Science  
 Electrical Engineering \*\*  
 Environmental and Natural Resource  
 Economics  
 Environmental Sciences  
 •Entomology  
 •Geosciences  
 •Natural Resources Science  
 •Plant Sciences

Fisheries, Animal, and Veterinary Science  
 Human Development and Family Studies  
 •College Student Personnel  
 •Human Development and Family  
 Studies  
 •Marriage and Family Therapy  
 Kinesiology  
 Labor Relations and Human Resources  
 (M.S. or *joint M.S./J.D.-RWU*)  
 Manufacturing Systems Engineering \*\*  
 Mathematics  
 Mechanical Engineering and Applied  
 Mechanics \*\*  
 Nursing  
 Nutrition and Food Sciences  
 Ocean Engineering \*\*  
 Oceanography  
 Pharmaceutical Sciences  
 Physical Therapy  
 Physics  
 Psychology: School  
 Speech-Language Pathology  
 Statistics  
 Textiles, Fashion Merchandising,  
 and Design

### Doctor of Philosophy

Applied Mathematical Sciences  
 •Applied Mathematics  
 •Computer Science  
 •Operations Research  
 •Statistics  
 Biological Sciences  
 Business Administration  
 •Finance and Insurance  
 •Management  
 •Management Science  
 •Marketing  
 Cell and Molecular Biology  
 Chemical Engineering \*\*  
 Chemistry  
 Civil and Environmental Engineering \*\*  
 Computer Science  
 Education (*joint URI-RIC*)  
 Electrical Engineering \*\*  
 English  
 Environmental and Natural Resource  
 Economics  
 Environmental Sciences  
 •Entomology  
 •Fisheries, Animal, and Veterinary  
 Science  
 •Geosciences  
 •Natural Resources Science  
 •Plant Sciences  
 Industrial and Manufacturing  
 Engineering \*\*

Marine Affairs

Mathematics  
 Mechanical Engineering and  
 Applied Mechanics \*\*  
 Nursing  
 Nutrition and Food Sciences  
 Ocean Engineering \*\*  
 Oceanography  
 Pharmaceutical Sciences  
 Physics  
 Psychology  
 •Clinical  
 •Experimental  
 •School

### Professional Degrees

Master of Business Administration  
 (M.B.A.)  
 Master of Environmental Science and  
 Management (M.E.S.M.)  
 Master of Library and Information  
 Studies (M.L.I.S.)  
 Master of Marine Affairs (M.M.A.)  
 (*also joint M.M.A./J.D.-RWU*)  
 Master of Music (M.M.)  
 Master of Oceanography (M.O.)  
 Master of Public Administration (M.P.A.)  
 (*joint URI-RIC*)  
 Doctor of Audiology (Au.D.) \*  
 Doctor of Physical Therapy (D.P.T.)  
 Teacher Certification

\* This degree program is no longer open to incoming students.

\*\* This program includes the option of earning dual degrees from URI and from Technische Universität Braunschweig, Germany. For more information, visit [uri.edu/iep/info/graduate\\_iep.htm](http://uri.edu/iep/info/graduate_iep.htm).

## Research

**Office of Graduate Studies, Research, and Outreach.** Since 1907, the University has held the major responsibility within the state for graduate education, which is closely associated with a strong program of research. Research leads to the discovery of knowledge and its dissemination through teaching. Responsibilities for graduate education, embodied in the Graduate School, and the overseeing of research funding in the Research Office are assigned to the Office of Graduate Studies, Research, and Outreach. Research and public service projects are conducted in all departments and programs offering graduate degrees.

URI undergraduates are provided with a unique learning experience by participation in the research activities of Presidential Partnerships, which involve various disciplines and faculty from several departments and colleges. Current partnerships are in the areas of ocean instrumentation; food, hunger, and nutrition; and three-dimensional computer modeling.

Research throughout URI was supported by \$77.7 million in 2006, up from \$40 million in 1998. Support comes from foundations, commercial firms, federal and state agencies, and the University. The University ranks among the top 10 percent of the country's colleges and universities in the amount of research funding received.

Applications for research grants and acceptance of awards are approved by the Vice Provost for Graduate Studies, Research, and Outreach. The Research Office provides assistance to the University research community in all aspects of research and the preparation of proposals and award acceptance.

In addition to department research, the University has established a number of research, extension, and technology transfer programs in the following areas:

### *Children, Families, and Communities*

- child development
- family therapy
- family violence
- historic costumes and textiles

- innovative programs in response to the needs of state government
- policy evaluation and analysis for public officials
- research and support activities for the public and human services area
- textile conservation
- urban field research and technical assistance

### *Enterprise and Advanced Technology*

- advanced sensor-based systems, including robotics
- basic and applied research in filtration and separation processes
- business and economics
- consumer product safety
- distributed computing
- early design analysis for improving product design for ease of manufacturing
- fault-tolerant digital circuits and systems
- high-performance computer processor, memory, and input/output design
- international aspects of business
- labor and industrial relations
- market research
- nanotechnology
- nuclear magnetic resonance spectroscopy
- Pacific basin capital markets information
- pollution prevention and technical assistance for New England industries
- process engineering
- product design
- rapid prototyping for manufacturing
- scientific criminal investigations
- sensors
- signal processing
- telecommunications and information marketing
- textile performance testing
- thin film materials
- water resource research and training

### *Health*

- anti-infective pharmacology
- biology, ecology, and control of vector-borne diseases
- biotechnology
- cancer prevention through behavioral change
- drug delivery and development
- evaluation services and assistance to exercise and athletic programs

- nutrition and food science
- gerontology
- medicinal chemistry
- physical therapy
- speech and hearing testing and diagnosis
- thanatology (end-of-life care and bereavement)
- weight management through behavior modification

### *Marine and the Environment*

- agriculture experimentation and research
- autonomous underwater vehicles (AUVs)
- aquaculture
- atmospheric chemistry studies
- biotechnology
- economic effect of marine policy
- environmental horticulture
- estuarine and coastal pond dynamics
- golf and sports turf management
- management of coastal resources
- marine ecosystems
- marine environmental modeling and monitoring systems
- marine geological sampling and testing
- marine geomechanics
- marine pathology
- nonlinear wave dynamics
- ocean drilling
- ocean instrumentation (forward-looking sonar)
- satellite remote sensing for terrestrial, coastal, and near-shore applications
- seabed characterization
- sea floor mapping
- Sea Grant research, education, and marine advisory services
- structural acoustics
- underwater tracking
- use of geographic databases to solve environmental problems
- waves generated by tsunamis

Additional information on these areas of research and expertise at URI can be obtained from the Research Office, 70 Lower College Road, or online at [uri.edu/home/research](http://uri.edu/home/research).

**Research Facilities.** URI is the principal public research institution in the state of Rhode Island, and a number of innovative research facilities are housed on our campuses. These include facilities at URI's Narragansett Bay Campus, the College of Engineering's Kirk Computer Center, chemistry laboratories, and marine research laboratories, including a 12,000-square-foot research aquarium. The *R/V Endeavor* is the University's "offshore" research vessel, a 184-foot ship operated by the Graduate School of Oceanography. *Endeavor* is capable of working in all parts of the world's oceans. The Bay Campus is also home to the Rhode Island Nuclear Science Center, where scientists have access to a research reactor for chemical analysis by neutron activation and mass spectrometry. Other significant Bay Campus research facilities include the Marine Ecosystems Research Laboratory where large-scale marine ecosystem experiments are conducted; the Marine Geological Samples Laboratory, a virtual reality simulator used to study ocean and atmospheric circulation; and acoustic calibration and model tow tanks. A wide range of sophisticated educational and research facilities are on the campus, including a geophysical fluid dynamics laboratory with a rotating table, a paleomagnetic laboratory, various types of mass spectrometers, a marine geological samples laboratory, and high resolution optical sensing for biological studies. For more information, and to contact individual researchers, visit the GSO Web site at [gso.uri.edu](http://gso.uri.edu).

URI's research facilities are as varied as our programs of study. Our College of Nursing possesses practice laboratories for students with a variety of equipment, and the Department of Plant Sciences operates 50 acres of research and education farm centers, including the C. Richard Skogley Turfgrass Center, the oldest turfgrass research and teaching program in the U.S. Plant Sciences is also affiliated with the URI Botanical Gardens and E.P. Christopher Arboretum. URI's entomology program has a biological quarantine laboratory, the

only such university-affiliated facility in the Northeast. Our physical therapy program has a clinical service and research unit that includes specialized exercise training equipment, computerized muscle dynamometry and clinical electrophysiology laboratories, aquatic therapy facilities, and work hardening stations. The Department of Kinesiology houses laboratories specializing in assessing human performance, metabolic testing, electron microscopy, and body composition analysis. URI's Speech and Hearing Clinic is a state-of-the-art service provider for individuals with speech, language, and hearing problems. While serving the community, it provides training and research opportunities for students. The Department of Chemistry houses laboratories specializing in NMR, analyses of energetic materials, forensic, biological, and separations science, and spectroscopy.

The Genomics and Sequencing Center (GSC), in the Department of Cell and Molecular Biology in the Morrill Science Building, provides technical and analytical support for the molecular biology and genomics research focus of the University. The GSC offers services in robotic sample preparation, DNA sequencing, fragment analysis, and real-time/quantitative PCR to campus researchers and external clients. The GSC also provides imaging services using transmitted light, epifluorescence and scanning confocal microscopy, as well as cryostat sectioning of frozen specimens. Investigators are encouraged to incorporate these services into their research and teaching needs. The GSC is available for students, staff, and faculty at URI, as well as non-URI researchers. Detailed information on sample preparation, submission instructions, and equipment use may be found at the GSC Web site at [uri.edu/research/gsc](http://uri.edu/research/gsc).

For more information on URI's research facilities, please turn to the section on the college or department you are interested in.

**Office of Information Services.** The Office of Information Services (OIS) provides computational resources to the University community for instruction and research.

OIS maintains central server support, general purpose computing facilities, student personal computing resources, and a high-speed network. Students are provided access to an assortment of electronic services through the commercial Internet as well as Internet2. Our staff provide a variety of services to support these facilities and assist the University community.

Centralized general purpose computing at URI is supported on an IBM RISC system running AIX. A full complement of programming languages and packages is available. Facilities for computer graphics are also offered, including a color plotter. Several hundred personal computers and workstations are located in public work areas, and most private offices are equipped with computing resources. These devices are connected to the campus Ethernet which provides access to the Office of Information Services, as well as independent college and departmental facilities.

URI's Office of Information Services manages numerous personal computer laboratories on campus, featuring both IBM and Macintosh workstations. A wide variety of software application packages are available. These labs are available for faculty research, teaching, and general student use. In addition, a number of laboratories are specifically designed for use as computer classrooms.

## University Libraries

The University Libraries are located on three of the University's campuses. The major collection is housed at the University Library in Kingston. There are also libraries at the Feinstein Providence Campus and at the Narragansett Bay Campus. The Pell Marine Science Library on the Narragansett Bay Campus houses the National Sea Grant Depository.

The University is a member of the Higher Education Library Information Network (HELIN), which extends borrowing privileges to the faculty, staff, and students of the Community College of Rhode Island, Brown University, Bryant College, Johnson

& Wales University, Providence College, Rhode Island College, Roger Williams University, Salve Regina University, the University of Rhode Island, and Wheaton College (in nearby Norton, Massachusetts). The 13 R.I. health sciences libraries are also part of the HELIN network. Holdings of these libraries are included in the online public access catalog.

The University Library in Kingston has open stacks that provide direct access to 1.3 million volumes, 25,000 electronic journals, 750,000 government documents, 1.6 million microforms and 9,250 items in the audiovisual collection. The Special Collections Department collects and maintains rare books, personal and political papers, church and historical records, the University archives, the commercial pattern archives, and a variety of special interest materials. The University Library provides full reference, bibliographic, and circulation services during most of the 100 hours a week it is open.

## Accreditation

The University of Rhode Island is accredited by the New England Association of Schools and Colleges. In addition, certain courses and programs of study have been approved by national accrediting agencies.

The New England Association of Schools and Colleges is a nongovernmental, nationally recognized organization whose affiliated institutions range from elementary schools to collegiate institutions offering postgraduate instruction.

Accreditation of an institution by the New England Association indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one that has the necessary resources available to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the New England Association is not partial, but applies to the University as a whole. As such, it is not a guarantee of the quality of every course or program offered, or of the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the University.

Inquiries regarding the status of an institution's accreditation by the New England Association should be directed to the school's administrative staff or to the association at 209 Burlington Road, Bedford, MA 01730; 781-271-0022.

The national accrediting agencies that have approved the quality of certain course offerings and programs of study include the Accreditation Board for Engineering and Technology, Accreditation Council for Pharmacy Education, American Assembly of Collegiate Schools of Business (AACSB), American Association of Marriage and Family Therapy, American Chemical Society, American College of Nurse-Midwives, American Dietetic Association, American Library Association, American Physical Therapy Association, American Psychological Association, American Society of Landscape Architects, American Speech-Language-Hearing Association, Commission on Collegiate Nursing Education, National Association of School Psychologists, National Association of Schools of Music, National Council for Accreditation of Teacher Education, and the Planning Accreditation Board.

The University is also an approved member institution of the American Association of Adult and Continuing Education, the American Council on Education, the Association for Continuing Higher Education, the Association of American Colleges and Universities, the Council for Higher Education Accreditation, the Council of Graduate Schools, Hispanic Association of Colleges and Universities, the Institute for International Education, the National Association of State Universities and Land-Grant Colleges, the North American Association of Summer Sessions, the Northeastern Association of

Graduate Schools, the Society for College and University Planning, and the University Continuing Education Association.

## The University Community

In addition to the student body, the University community is made up of faculty, administration, staff, and alumni. The *Faculty Senate* represents the faculty and is authorized by the general faculty to conduct the business assigned to the faculty by law or by the Board of Governors for Higher Education. The *Graduate Council* is the representative body for the graduate faculty and determines the academic policies for graduate study. The office of *University Ombud* investigates complaints from students, faculty members, and administrative personnel that they have been unfairly dealt with in the normal channels of the administrative process. The ombud is a tenured or emeritus member of the faculty appointed by the Faculty Senate and is assisted by a student appointed by the President.

The *Instructional Development Program* (IDP) exists to help faculty members in their teaching responsibilities. Faculty members who want to increase their teaching effectiveness by improving their skills or developing new ones may work individually with IDP staff and participate in various workshops, colloquiums, and seminars on teaching.

The voices of alumni are heard through the *Alumni Association*. The Alumni Relations Office recognizes all those who have attended the University for two semesters or more and whose class has graduated. URI has more than 96,000 alumni throughout the world. The Alumni Relations Office promotes the interests of the University and helps keep alumni in touch with their alma mater. Through its office and its network of chapters and affinity groups throughout the country, the Alumni Relations Office maintains ties with URI alumni through services, programs, special events, the magazine *QUAD ANGLES*, and the bi-weekly e-newsletter *InAdvance*. An annual membership

drive program provides funds for reunions, Homecoming, special events, the Student Alumni Association, alumni publications, and other University projects. The annual Winter Gala, Alumni Golf Tournament, and Annual Fund Drive provide scholarship and other University aid.

The University receives less than 25 percent of its support from the state. The balance comes from student fees and tuition, federal grants, and auxiliary enterprises and other miscellaneous sources. The *University of Rhode Island Foundation* seeks to encourage private giving to the University and manages the endowment. The Foundation exists solely for the benefit of the University of Rhode Island. Its mission encompasses various activities including a boat donation program made possible by the Foundation's 501(c)(3) status and an annual ball to raise money for scholarships. The Foundation also manages and licenses patents, copyrights, and trademarks for the University. Its trustees elect officers and an executive board of 30 members. Among the latter are the chairman of the R.I. Board of Governors for Higher Education, the University president, and the president of the Alumni Association. During the past twenty years, the URI Foundation has made contributions to the University of Rhode Island from endowment totaling \$35.7 million. The University of Rhode Island Foundation was established by an act of the Rhode Island General Assembly on May 2, 1957, and is celebrating 50 years of commitment and service to the University community.

**Academic and Social Codes.** Each student is a member of the University community, with all the rights, privileges, and responsibilities that go with such membership. The rights and privileges include full use of the educational opportunities and facilities offered on campus. The responsibilities include those of making proper use of these facilities in order to progress educationally, respecting the rights of others, and knowing and obeying the rules and regulations developed by the University community for the good of the total membership.

The University expects that all course papers, theses, and dissertations will be prepared, and all examinations taken, in conformance with accepted standards of academic integrity. This includes the proper citation and attribution of all material that is not the original product of the writer. It is the student's responsibility to determine the appropriate style used in his or her discipline for presentation of material derived from other sources and to adhere to it scrupulously in all written presentations. (See "Cornerstones," below.)

In addition, each student's University ID Card must be carried at all times on campus and presented upon request. Use of the card constitutes acceptance of all applicable terms and conditions. This card will remain the property of URI. Lost, stolen, or damaged cards must be reported immediately to the Campus Access Office (Room 216, Memorial Union).

**Affirmative Action and Nondiscrimination.** It is the policy of the University of Rhode Island not to discriminate on the basis of race, sex, religion, age, color, creed, national origin, disability, sexual orientation, gender identity or expression, and not to discriminate against disabled and Vietnam era veterans in the recruitment, admission, or treatment of students, the recruitment, hiring, or treatment of faculty and staff, and in the operation of its activities and programs, as specified by state and federal laws, including the Equal Pay Act of 1963, Titles VI and VII of the Civil Rights Act of 1964, as amended, the Age Discrimination in Employment Act of 1967, Title IX of the 1972 Educational Amendments to the Higher Education Act, Executive Order 11246, as amended, Sections 503/504 of the Rehabilitation Act of 1973, as amended, the Americans with Disabilities Act of 1990,

## URI CORNERSTONES

The University of Rhode Island is a principled community guided by values. As members of this community, we subscribe to the following principles, which form the foundation of our endeavors.

- We pursue knowledge with honesty, integrity, and courage.
- We promote independent choice, intellectual curiosity, open-mindedness, and free expression.
- We respect the rights and dignity of each individual and group.
- We reject prejudice and intolerance, and we work to understand differences.
- We accept personal responsibility for our actions and their consequences.
- We actively cooperate to improve the University, the state of Rhode Island, and the global community beyond our borders.
- We strive to be a community where the environment and property are treated respectfully.
- We seek to create and maintain an environment conducive to personal health and wellness.
- We work to develop skills that promote lifelong learning, leadership, and service.

*Developed by the Quality of Student Life Committee  
and endorsed by the URI Student Senate.*

and all other laws which pertain to access and equity. For further information regarding this statement, please contact Robert Gillis, Director, Affirmative Action, Equal Opportunity and Diversity, at 401-874-2442.

The administrators of Undergraduate Admission, Student Financial Aid, Graduate School, Career Services, Counseling Center, and Special Programs for Talent Development cooperate to provide information and guidance for economically and socially disadvantaged individuals seeking opportunities for study at the University. Inquiries may be directed to any of these offices.

With regard to scholarships and commissioning into the armed forces, the ROTC program, in accordance with Department of Defense policy, does not comply with the University's policy on nondiscrimination based on sexual orientation.

Most buildings on campus are architecturally available to the disabled, and provision is made to ensure that no student is prevented from pursuing a course of study because of restricted access to buildings.

AIDS is one of the most tragic, life-threatening epidemics of modern times. Students, faculty, and staff at the University of Rhode Island must provide the compassion, understanding, and support necessary to help individuals with AIDS and HIV infection. As part of this responsibility, the University will vigorously enforce individual rights of confidentiality and freedom from discrimination. The rights of individuals with AIDS are covered under three University policies based on Section 504 of the Rehabilitation Act of 1973: "Reasonable Accommodation for Handicapped Employees," "Life-Threatening Illness," and "Handicapped Policy." Copies of these policies are available at the Office of Human Resource Administration, Health Services, and the Disability Services office in the Memorial Union.

Inquiries concerning compliance with antidiscrimination laws should be addressed to Robert Gillis, Director of Affirmative Action, Equal Opportunity and Diversity, Suite 201, Carlotti Administration Building, 401-874-2442. Questions regarding provisions for students with disabilities should be directed to the director of Disability Services in the Office of Student Life, 330 Memorial Union, 401-874-2098 (TT via R.I. Relay, 1-800-745-5555).

### Notice of Change

Rules, regulations, dates, tuition, fees, the availability and titles of programs and areas of specialization, their administrative location, and courses set forth in this catalog are subject to change without notice. Where a change in program requirements is made while a student is enrolled, the student may elect to complete the program under the requirements in effect at the time of matriculation or to shift entirely to the new requirements, but may not choose parts of each set. As a result of the ongoing reviews of all programs, certain offerings and specializations may be deleted or restructured between editions of this catalog.

### Summary of Enrollment Fall Term 2006 (Nonduplicated)

#### Undergraduate Students (by College)

Arts and Sciences	1,550
Business Administration	792
Engineering	470
Environment and Life Sciences	1,079
Human Science and Services	845
Nursing	419
Pharmacy	354
(includes professional 6-year pharmacy program students)	
University College	6,177
Continuing Education (B.G.S.)	575
Nondegree (Credit)	333
<b>Total (Male 5,478; Female 7,116)</b>	<b>12,594*</b>

#### Graduate Students

Degree	1,891
Degree (Continuous Registration)	34
Certificate	64
Postbaccalaureate (nondegree)	642
<b>Total (Male 940; Female 1,691)</b>	<b>2,631</b>

**TOTAL ENROLLMENT** **15,225\***

\*includes 163 off-campus study students

# STUDENT LIFE AND SERVICES

An enriching college life includes a well-balanced mix of academic and extracurricular activities. The University offers a unique blend of student organizations and activities with an emphasis on student-run services and businesses.



*While much of the information provided here applies primarily to students at the Kingston Campus, you can find more information on offerings at URI's Providence Campus on pages 18 and 74 of this catalog, by visiting [uri.edu/prov](http://uri.edu/prov), or by visiting Room 125 at the Providence Campus.*

## Undergraduate Orientation

Orientation programs that facilitate new students' entry into the campus community are administered by University College. New students are charged a fee to cover expenses associated with participation in orientation such as room, meals, and materials.

**New Student Orientation.** All new first-year undergraduate students attend a two-day orientation to plan their academic programs, meet with an academic advisor

and register for first-term classes, learn about URI, and begin to acquire the skills essential for successful transition from high school and home to the University community. Admitted students begin receiving orientation registration materials in April.

Parents and family members of new students are invited to attend a specialized family orientation program, which coincides with New Student Orientation.

**Transfer Orientation.** Transfer students with 24 credits or more who are admitted to University College, rather than any of the degree-granting colleges, are invited to attend Transfer Orientation. This one-day program is designed to acquaint transfer students with some of the unique features and procedures of the University. Students meet with academic advisors and register for first term classes.

**Orientation for International Students.** The Office of International Students and Scholars has implemented an orientation program and ongoing workshops to provide assistance in personal, academic, and financial matters to our international community and their dependents. Through this venue, OISS contributes to the University of Rhode Island's commitment to a global perspective. Staff members are available to help students adjust to life at the University and in the United States.

## Lifestyles

**Undergraduate Housing.** Residence halls and boarding facilities are available to URI students during the regular academic year and during summer sessions. Some students prefer the option of living in a fraternity or sorority or off campus. Because of the ongoing residence hall renovation project, on-campus housing for incoming transfer students is extremely limited.

**Residence Halls and Dining Centers.** There are 22 residence halls, two undergraduate apartment complexes, and multiple theme houses on campus offering a variety of living accommodations. Notices are forwarded to all residence hall students during the spring semester to inform them of the housing application procedure for the following year. After returning students have been assigned, first-year students who have paid their housing application fee by May 1 will be assigned to the designated first-year housing spaces. All other students will be assigned on a space-available basis. Assignments of incoming students are generally made in the order in which their housing deposits are received. Every effort is made to honor roommate requests. For rates and contracts, see page 22.

Applications for residence hall living can be obtained from the Department of Housing and Residential Life, Roger Williams Building. Phone: 401-874-4151.

More information about residence hall living at URI can be obtained by visiting [housing.uri.edu](http://housing.uri.edu).

For students' convenience, URI offers two dining centers, two cash restaurants, a café, library coffee cart, a bakery, and a warehouse shopping center with a wide variety of food items. These facilities were constructed with bond funds. In order to guarantee repayment of these bonds, the University requires that all students living in residence halls choose from a selection of available resident meal plans.

Each URI student also has the opportunity to obtain a Ram account, which is an optional debit card account accessed through the student's ID card. Students who participate in the program have the ability to purchase food and supplies from various on- and off-campus merchants. Unused dollars in the Ram Account transfer from semester to semester until graduation.

**Fraternities and Sororities.** About 1,000 students participate in URI's fraternity-sorority system, which sponsors 13 houses designed for congenial small-group living. The Office of Campus Life advises these groups. The Greek houses promote scholarship, citizenship, and small-group living. Purchasing and business management for these houses is provided by a private corporation controlled by the fraternity and sorority members.

**Graduate Housing.** Interested students should contact URI's Department of Housing and Residential Life for information, at 401-874-5390.

**Off-Campus Housing.** URI typically has two types of commuter students: those who live "down-the-line" and those who live at home. There are approximately 6,000 undergraduate students commuting daily to the University, and a variety of services are available on campus for those commuter students.

The Commuter Housing Office maintains an up-to-date database containing available property rentals and roommate listings for URI students, faculty, and staff.

The office also assists students with landlord and tenant questions and general campus information. Each fall, the office sponsors a Commuter Housing Fair as well as several other community projects and events throughout the school year. Commuter students have access to campus computer labs, Health Services, the Counseling Center, library, and the Commuter Lounge. The Commuter Lounge and Commuter Housing Office are located on the third floor of the Memorial Union. An additional service available to commuter students through the Dining Services office is the Commuter Meal Plan.

*Commuting from "Down-the-line."* Juniors and seniors as well as graduate students often choose to live off-campus in the southern Rhode Island area known as "down-the-line." These students typically commute five to 15 miles to the University and rent summer homes for the academic school year. Many of these students live in houses or apartments and pay approximately \$400–600 per month, plus utilities, for each bedroom in a furnished home. Supermarkets, laundries, restaurants, shopping centers, beaches, and recreational facilities are located throughout this area and often frequented by commuter students.

Because most of these rentals are five or more miles from campus, students without cars should investigate the availability of public transportation to rentals in this area. A local bus service connects the shopping and service areas of Wakefield with the University. Many of the outlying resort areas, such as Narragansett Pier, Galilee, and Scarborough, are also located on bus routes to and from the University. In addition, bus service is available to Newport and Providence, to the Amtrak railroad station in Kingston, and to T.F. Green Airport in Warwick.

For more information, contact URI Commuter Housing, 316 Memorial Union, call 401-874-2828, e-mail [CHO@etal.uri.edu](mailto:CHO@etal.uri.edu), or visit [uri.edu/commuter\\_housing](http://uri.edu/commuter_housing).

## Student Government

**Undergraduate.** The *Student Senate* is a legislative body that represents the undergraduate students to the administration and faculty. It oversees student organizations and provides funding for them by distributing a portion of the Student Services fee. The Senate Office is located in the Memorial Union, phone: 401-874-2261. URI's Interfraternity Council supervises fraternity affairs, and the Panhellenic Association governs sorority life.

**Graduate.** The *Graduate Student Association (GSA)* is a government body maintained by and for the graduate students of the University with the purpose of enhancing the academic, intellectual, and social opportunities of its members. Officers and members of the GSA Senate, who are elected annually from the entire graduate student body, distribute GSA funds and represent the graduate students to the University. GSA offices are located in room 317 of the Memorial Union, phone: 401-874-2339, e-mail: [gsa@etal.uri.edu](mailto:gsa@etal.uri.edu), Web site [gsa.uri.edu](http://gsa.uri.edu).

## Student Discipline

Administered by the Office of Student Life, the University Student Discipline System is designed to promote student growth and to preserve the atmosphere of learning necessary to the well-being of all students. Community standards of behavior and University policies for students are published in the *Student Handbook* ([uri.edu/judicial/studenthandbook](http://uri.edu/judicial/studenthandbook)).

The Student Discipline System receives complaints or allegations from aggrieved parties, the available facts are gathered and evaluated, and the case may be referred for formal administrative action or a hearing. Outcomes range from "no further action" to suspension or dismissal from the University and may include education, assessment, fines, or other conditions relating to the nature of the violation.

## Student Services

**Academic Enhancement Center.** Located on the 4th floor of Roosevelt Hall with the Writing Center, the AEC supports academic achievement for students in all majors.

The AEC's trained undergraduate and graduate staff offer interactive Supplemental Instruction (SI) sessions for selected courses and one-to-one and small group tutoring in all academic areas (by appointment and on a walk-in basis). Students may seek AEC services for specific courses or assignments, or for general academic and organizational skills such as time management, effective listening, note taking, or test taking. The AEC also helps organize and facilitate study groups, and provides study group materials to students and faculty who wish to organize their own study groups. Workshops on study skills and organizational skills are offered throughout the year, and by appointment to campus groups. Additionally, AEC staff work with faculty and staff to strengthen connections between classroom and lab learning and AEC services.

The AEC is open throughout the academic year, Monday through Thursday from 9 a.m. to 9 p.m., Friday from 9 a.m. to 1 p.m., and Sunday from 4 p.m. to 8 p.m. Up-to-date information on services available, office hours, tutor and teaching assistant schedules, tutor profiles, and special announcements are available on the AEC Web site, at [uri.edu/aec](http://uri.edu/aec). Students may make appointments online or by calling 401-874-2367. Walk-ins are taken on a first-come-first-served basis.

Students in excellent academic standing at all levels are encouraged to apply for tutoring positions in the AEC. Applications are available at the AEC Web site and in the AEC office.

**Career Services.** Offering both "high tech" and "high touch" approaches, URI's centralized Career Services Department in Roosevelt Hall assists URI undergraduates, seniors, grad students, and alumni assess their career goals, develop job search and decision-making skills, and implement career objectives. From the first year on, Career Services helps students choose

majors, explore options, and find direction through professional one-to-one personal assessment.

Career Services manages on-campus job postings and an on-campus Student Employment Fair in the fall, and helps students with or without work study awards search for these positions. The office provides a central online 24/7 posting location as well for internships and part-time, summer and full-time jobs. To attract and raise incoming students' awareness of the importance of an "early start" to career education, Career Services holds an annual fall welcome party in front of its location at Roosevelt Hall.

A full range of career development, planning, and placement services is provided to students from their first year at URI. A staff of professionally trained career counselors with advanced degrees in the field provides one-to-one confidential career assessment and career advising. In addition, Career Services offers students opportunities to meet with employers on-campus: staff maintains active relationships with over 2,000 employers (including school systems and non-profit organizations) from all geographic locations.

To disseminate job opportunities equitably, Career Services uses state-of-the-art Web-based recruiting programs. A secure system allows students and registered alumni to search and apply for part-time jobs, on-campus jobs, full-time jobs, and internships; apply for on-campus interviews; have their résumés forwarded to employers; access mentors; and learn about career fairs.

During the academic year, students may use walk-in career advising services for résumé reviews and other immediate concerns.

Job and internship fairs and networking events are held in both fall and spring and are open to all. Specialty job fairs attract specific students and alumni. These include Summer and Internship Job Fairs, Engineering and Technology Job Fair, Business Networking Night, Nursing and Pharmacy Job Fairs, Education/Teaching Career Fair, and major Fall and Spring Career & Job Fairs held at the Ryan Center.

URI Career Services also assists students whose goals include graduate or professional school. A Graduate School Expo is held in the fall. Career professionals review graduate school essays, assist in graduate school research, and advise concerning job search and interview techniques.

The Career Resource Center at Career Services houses print and multimedia materials, including self-assessment tools, company information, and an Internship corner offering both print and Web-based access to opportunities. Workshops—including how to choose an internship, how to conduct a job search, how to write résumés and cover letters, and how to interview—and several senior-oriented seminars are held in the CRC, which is open year-round.

For more information and hours, visit the Career Web site at [career.uri.edu](http://career.uri.edu), call 401 874-2311, or email [career@etal.uri.edu](mailto:career@etal.uri.edu).

**Chaplains.** The University chaplains are active in providing religious services and in counseling, advising campus groups, teaching, and programming. The chaplains are available to all students, staff, and faculty on a 24-hour basis. The chaplains represent the Roman Catholic, Jewish, and Protestant communities; referrals are available to representatives of other faiths.

**Counseling.** The Counseling Center, located in room 217 of Roosevelt Hall, is staffed by professional counselors, psychologists, and social workers. The Center offers individual counseling and a variety of skill-building and support groups to help undergraduate and graduate students achieve their academic and life goals. The Counseling Center provides assistance to students in areas such as adjusting to college life, coping with stress, building satisfying relationships, planning for the future, and coping with depression, substance use, or other mental health challenges.

Counselors work closely, as appropriate, with other health care providers in Health Services. Additionally, some students contact the Counseling Center for help with concerns about a roommate or friend. Information shared in counseling is confidential. Center hours are Monday through Friday

8:30 a.m.–4:30 p.m. with extended hours until 6:30 p.m. on Tuesday.

To make an appointment, students may simply stop by the Counseling Center, complete a brief self-assessment form, and schedule a time to meet with a counselor. If you need help with an urgent matter, ask to speak to the counselor on call. Phone: 401-874-2288. Web site: [uri.edu/coun](http://uri.edu/coun).

**Disability Services.** The URI community encourages contributions to the learning environment from members of all its cultures, including students with disabilities. The office of Disability Services for Students recognizes disability as cultural diversity and fosters an inclusive environment for all in the University community through education, awareness, and accessibility.

We accomplish this mission by:

- recommending and coordinating reasonable accommodations in a variety of domains (exam, course, program, housing, transportation),
- encouraging development through self-advocacy and personal decision making,
- supporting a commitment to academic success,
- providing training and information to faculty and administration that uphold the inclusion of persons with disabilities.

Individuals who wish to discuss program and course accommodations and/or adaptive technology may contact the director of Disability Services in the Office of Student Life, 330 Memorial Union. Phone: 401-874-2098 (for TTY access call R.I. Relay at 1-800-745-5555).

For more information on disability services at URI, visit [uri.edu/disability\\_services](http://uri.edu/disability_services).

**Health Services.** Located in the Potter Building, adjacent to the residence halls, Dr. Pauline B. Wood Health Services provides primary ambulatory care to students. Nurse practitioners and physicians see students by appointment Monday through Friday from 9 a.m. to 8 p.m. in the general medicine and women's clinics with laboratory, radiology, and pharmacy services available. Limited services are available on

Saturdays, Sundays, and most holidays with physician and pharmacy coverage from noon to 4 p.m.

Specialists in orthopedics, surgery, internal medicine, dermatology, gynecology, and psychiatry hold regular clinics at the Potter Building. A travel/immunization clinic administers vaccines available from the pharmacy. Allergy injections are given, provided the vaccines are supplied by the student. Care provided at Health Services is billed to insurance companies. Your mandatory health service fee covers all office visits not covered by insurance. Lab and X-ray charges not covered by insurance are the responsibility of the student. Co-payment for pharmacy is expected at the time of service.

Hospital care is available in the local community, as is referral to specialists. All medical expenses incurred outside the University's Health Services are the responsibility of the student. Therefore, students are required to have adequate accident/sickness or health insurance. Students who choose a private physician assume responsibility for expenses incurred. See "Accident/Sickness Insurance" on page 21 for additional details or consult the Health Services brochure, "To Your Health."

Health educators provide a variety of services to promote and enhance personal health and well-being. Information on how to achieve a healthy lifestyle is provided through wellness clinics, outreach activities, awareness days, and dynamic peer education program workshops. A registered dietitian is available for nutrition education and counseling.

An emergency medical service (URI EMS) staffed by student volunteer EMTs responds to campus emergency medical calls 24 hours a day and transports patients to Health Services or the South County Hospital emergency room during the academic year.

**Independent Students.** Independent or nontraditional students make up over 10% of URI's undergraduate population. Any students over the age of 23 who are either returning to the University for a second

degree or starting anew are eligible to benefit from the services provided at the Women's Center on 22 Upper College Road. The office is always on hand to lend individual support and ease an Independent Student's transition to college life. For more information on Independent Student Services, call 401-874-2097 or visit [uri.edu/women\\_center](http://uri.edu/women_center).

**International Students.** The Office of International Students and Scholars (ISS) provides services for all internationals holding F and/or J nonimmigrant visa designations. We serve approximately 500 international visiting scholars, graduate and undergraduate students (degree and non-degree) and their dependents, from as many as 59 different nations. We are responsible for communicating and interpreting statutes, rules, and regulations that derive from the Department of Homeland Security, Department of State, Department of Justice, and the United States Citizenship and Immigration Services (formerly known as the Immigration and Naturalization Services). We also disseminate information pertinent to international visitors from the RI Division of Motor Vehicles, the Internal Revenue Service, and the Social Security Administration.

The staff at ISS is committed to providing valuable and comprehensive services to our international community. ISS also provides workshops and cross-cultural programming events for students, their dependents, and scholars. Our center serves as a cross-cultural meeting place, hosting social events and recreational trips. Our comfortable lounge is equipped with many amenities and is open to any URI student or URI student organization. We co-sponsor events with Civic Clubs, such as Rotary International Club, the Rhode Island Association of International Advisors, and New England Land Grant Colleges International Advisors.

For questions or inquiries contact our staff at 37 Lower College Road, Kingston, RI 02881. Phone: 401-874-2395. Fax: 401-874-2402. Email: [issoff@etal.uri.edu](mailto:issoff@etal.uri.edu). Web site: [uri.edu/iss](http://uri.edu/iss).

**International Teaching Assistants.** The International Teaching Assistant (ITA) Program offers resources and support for international graduate students who serve as teaching assistants. Oral proficiency testing, using the SPEAK test, is offered each semester to allow ITAs to demonstrate their competence in spoken English. They can also enroll in ELS 512 and 612, courses specially designed to prepare them for their teaching roles. If interested, contact the ITA coordinator in the English Language Studies Program, Independence Hall, 401-874-4686.

**Memorial Union.** The center for campus activities, the Memorial Union houses a wide variety of educational, social, cultural, and recreational services and facilities for both undergraduate and graduate students. These include meeting and conference rooms, lounges, study rooms, radio station, campus newspaper offices, game room, offices for student organizations, scheduling and information office, a mailroom for students living on campus, ballroom, optical shop, flower shop, convenience store, cafeteria, restaurant, pizza shop, and a coffee and pastry shop.

Among the services provided are a unisex hair salon, credit union, copy center, bookstore, computer store, computer lab, 193° Coffeehouse, and the Memorial Union Technical Productions (which offers technical services in sound and lighting).

An undergraduate student board of directors works with the director and staff of the Memorial Union/Student Involvement Office to determine policy for the Union and plan a full program of social, cultural, intellectual, and recreational activities.

**Multicultural Students.** Approximately 800 students use a variety of services for multicultural students at URI. African-American, Native American, Asian, Latin-American, Cape Verdean, Haitian, Muslim, and gay students have formed special-interest groups to further meet their needs. The Multicultural Student Center, located near the Memorial Union, serves as a gathering place for leisure, meetings, workshops, and

various activities. Counseling, programming, and other services are provided by the staff of Multicultural Student Services (401-874-2851).

Bilingual and multilingual students can further develop academic English skills through programs offered by the English Language Studies program. Phone: 401-874-4686.

**Talent Development.** URI also offers Special Programs for Talent Development, a program of special interest to many minority and disadvantaged students. Talent Development was started in 1968 to help young people who otherwise could not attend the University. "TD" provides a special opportunity for minorities and disadvantaged persons.

Talent Development at URI includes a spring Saturday PREP Program and an intense six-week academic summer experience on the Kingston campus, which many TD students mark as a turning point in their lives. Upon successful completion of PREP, each student arrives in Kingston in September as a URI student and a member of Talent Development. URI provides TD students with special academic advising, financial aid based on need, and a strong support community.

Any Rhode Island resident may apply for Talent Development. Specifically, the program looks for minority and/or disadvantaged students who, without TD and its support services, could not expect to be admitted to URI. Even those who finished high school a while ago, or have a GED, may still be eligible for Talent Development.

To find out more about Talent Development at URI or to get an application, ask your guidance counselor, call 401-874-2901, e-mail [tdinfo@etal.uri.edu](mailto:tdinfo@etal.uri.edu), or visit [uri.edu/talent\\_development](http://uri.edu/talent_development). You can also find more information on the program on page 32 of this catalog.

**Women Students.** Women students make up more than half of URI's total student population. A Women's Center, administered by the Office of Student Life, provides

the necessary resources to help create an environment rich in role models and free of sexual inequities. In addition, it coordinates lectures, programs, and activities of special interest to women. The Women's Center is located at 22 Upper College Road and includes a residential component for Women in Science and Technology, a Violence Against Women Prevention Program, and the Rose Butler Browne Women of Color Mentoring Program. Phone: 401-874-2097.

**Writing Center.** Located in the heart of the Academic Enhancement Center on the 4th floor of Roosevelt Hall, the Writing Center provides free writing assistance to anyone in the university community. Tutors work with all writers, from all disciplines, on all projects, at all stages of the writing process—from brainstorming and understanding the assignment, to drafting and organizing, to revising and learning how to self-edit. Sessions may be one-to-one with an individual tutor, or in small groups working on the same assignment.

The Writing Center focuses on helping students build strategies and habits for effective writing in any situation. Tutorials are limited to 30 minutes per session, but writers are encouraged to return for more visits at several points during each project. In addition to our sessions, other resources include homework and study tables, reference books, and computers for researching and composing.

Although appointments are encouraged, walk-in sessions are sometimes available. The Writing Center is open approximately 40 hours each week, with both day and evening hours. For more information, call the Writing Center at 874-2367, log on to the Web site at [uri.edu/artscli/writing/center](http://uri.edu/artscli/writing/center), or stop by the Academic Enhancement Center on the 4th floor of Roosevelt Hall.

Most tutors have been trained either as writing instructors in the College Writing Program, or as peer tutors through a course in writing consultancy (WRT 353). Anyone interested in becoming a Writing Center tutor should enroll in WRT 353.

## Student Involvement

Social, recreational, and cultural arts programs are sponsored by many different offices and student organizations at the University. These events are funded by student fees, and opportunities abound for students to become involved in selecting and coordinating them. The Student Entertainment Committee sponsors an extensive series of social programs featuring concerts, local and regional musicians, other live entertainment, lectures, and films.

In addition to intercollegiate athletic teams, a number of organizations represent the University in competition, exhibitions, and public performances. The University Band, Chorus, and Orchestra are under music department direction, and students may receive credit for participation in any one of these. The University Theatre, under the direction of the Theatre Department, presents several plays each year. The URI Debate Council is directed by members of the Department of Communication Studies and participates in intercollegiate debates. Cheerleaders are active at varsity football and basketball games and other special events and rallies.

Students publish a newspaper four times a week, a monthly literary magazine, a monthly publication of political and social commentary, and a yearbook. Radio station WRIU, with local AM and FM reception that reaches all of Rhode Island and parts of Connecticut and Massachusetts, is student-run and operates 365 days a year. There is also a 24-hour student-run ambulance service.

Over 90 student organizations exist in which students can get involved. Covering a wide range, these organizations may be social, political, academic, religious, or media-related; several represent special-interest groups. There are also about 30 professional organizations on campus related to academic areas. Thousands of students participate in the activities coordinated by these organizations. For information, students are directed to Room 210 in the Memorial Union.

**Athletics and Recreation.** The Department of Athletics and Recreation is committed to providing athletics and recreational opportunities to students, staff, and alumni. The department seeks to complement the University's academic goals by enhancing physical, emotional, and social well-being through leisure activities and lifetime involvement in sports.

The emphasis of the program is to provide opportunities that encourage the pursuit of lifetime activities, a sense of commitment and teamwork, and the development of personal character while maintaining an environment that values cultural diversity and gender equity among student athletes and department staff.

Men's intercollegiate teams participate in Division I-AA football and Division I baseball, basketball, cross-country, golf, soccer, swimming and diving, tennis, and indoor and outdoor track and field. Women's intercollegiate teams participate in Division I basketball, cross-country, field hockey, gymnastics, rowing, soccer, softball, volleyball, indoor and outdoor track and field, swimming and diving, and tennis.

Competitive club sport teams include equestrian, ice hockey, lacrosse, roller hockey, men's rowing, rugby, sailing, skiing, synchronized swimming, ultimate Frisbee, men's volleyball, water polo, and wrestling. The Intramural Sports Program also offers badminton, basketball, beach volleyball, billiards, bowling, flag football, floor hockey, golf, indoor soccer, softball, tennis, and volleyball throughout the year for all-male, all-female, and coed teams. In addition to membership in the Atlantic 10 Conference, the University holds membership in the Atlantic 10 Football Conference, NCAA, ECAC, and the New England Intercollegiate Athletic Association.

The 7,657-seat Ryan Center is the cornerstone of URI's athletic complex and serves as the home of Rhode Island men's and women's basketball teams. Located adjacent to Meade Stadium, the \$54 million facility gives Rhode Island one of the finest facilities in the nation. The 200,000-square foot arena combines the heart and spirit of

venerable Keaney Gym with the amenities, services, and conveniences of a modern arena. The Bradford R. Boss Arena is one of only two ice facilities in the state that operate for the entire year and are open for public skating.

The University has a number of other facilities for athletics and recreation. Mackal Field House contains two fitness rooms complete with weight training equipment, Lifecycles, stair climbers and rowing machines, a 200-meter track, four basketball courts, and a gymnastics training center. Mackal also houses the athletic department's administrative offices.

The 5,810-seat Meade Stadium opened in 1928 and underwent major renovations in 1980. An additional 2,200 seats recently opened along the west sideline. Opened in 1953, 3,385-seat Keaney Gym is the site of Ram volleyball matches. Keaney Gym was the home of the men's and women's basketball teams for 49 seasons. Tootell Physical Education Complex offers an aquatic center with competitive, instructional classes; two varsity team weight rooms; a dance studio; and East and West Gyms, available for basketball, volleyball, and badminton.

Complete with a new scoreboard and dugouts, Bill Beck Field is the home of the URI baseball team. The playing surface has been upgraded and is one of the top baseball facilities in the Atlantic 10 Conference. Other athletic facilities at URI include a lighted soccer field, field hockey field, 12 tennis courts, softball field, Arrigan Sailing Center, Campanella Rowing Center, two beach volleyball courts, and practice fields.

**Center for Student Leadership Development.** The Center for Student Leadership Development offers for-credit classes, internships/teaching assistant positions, workshops, conferences, and programs designed to enhance students' leadership skills. The credit classes count toward the academic minor in leadership. Other academic opportunities include individually designed internships, as well as tracks in Peer Leadership, Activism, Athletics, Fraternity and Sorority Leadership, and Emerging

Leadership. Popular programs and conferences include the First-Year Leadership Institute, Outdoor Adventure Programs, and the FLITE course. The Center also manages URI's North Woods Challenge Course. In addition, leadership and group development consulting services are available. For more information, visit the Memorial Union, Room 210.

**Honor Societies.** The University has chapters of a number of national honor societies, invitation to which is recognition of scholarly accomplishment. Several societies recognize scholarship over a wide range of disciplines: Phi Beta Kappa, a national liberal arts honor society; Phi Eta Sigma, a national honor society for freshmen; and Phi Kappa Phi and the Golden Key, national honor societies for general scholarship. More specialized honor societies include Alpha Sigma Lambda (continuing education), Alpha Kappa Delta (sociology), Beta Alpha Psi (accounting), Beta Gamma Sigma (business), Beta Phi Mu (Beta Iota chapter, library science), Chi Epsilon (civil engineering), Dobro Slovo (Slavic), Eta Kappa Nu (electrical engineering), Financial Management Association (URI chapter, finance), Gamma Kappa Alpha (Italian), Iota Iota Iota (women's studies), Kappa Delta Pi (education), Kappa Omicron Nu (O Alpha Mu chapter, family and consumer studies), Kappa Psi (pharmacy), Lambda Kappa Sigma (women's pharmacy), Lambda Pi Eta (Beta Gamma chapter, communication studies), Lambda Tau (medical technology), Omicron Delta Epsilon (economics), Omicron Delta Kappa (leadership), Onyx (African-American scholarship), Order of Omega (fraternity/sorority), Phi Alpha Theta (history), Pi Kappa Lambda (Zeta Epsilon chapter, music), Phi Lambda Sigma (pharmacy-peer recognition), Phi Sigma Iota (foreign languages, literature, and linguistics), Pi Delta Phi (French), Pi Mu Epsilon (mathematics), Pi Sigma Alpha (Gamma Epsilon, political science), Pi Tau Sigma (mechanical engineering), Psi Chi (psychology), Rho Chi (pharmacy), Sigma Alpha Pi (leadership and success), Sigma Delta Pi (Spanish), Sigma Iota Epsilon (management), Sigma Lambda Alpha

(landscape architecture), Sigma Pi Sigma (physics), Sigma Theta Tau (nursing), and Tau Beta Pi (engineering).

**Office of Student Involvement and Experiential Learning.** Staff members in the Office of Student Involvement and Experiential Learning create special programs and workshops that foster student involvement and offer academic opportunities outside the classroom. They advise student organizations in all areas of group dynamics, leadership, personal growth and development, and program planning. In addition, they coordinate Ram Tour weekend bus trips, the annual First Night/Welcome Week festivities for incoming students, and the annual A. Robert Rainville Student Leadership banquet.

**Student-Run Businesses.** The Memorial Union offers students a number of opportunities to run businesses under full-time supervision but with a large amount of independence. Enterprises such as the flower shop, Memorial Union Technical Productions (sound and lighting), and the 193° Coffee House allow for management training and excellent work experience.

## Feinstein Providence Campus

While all URI students have access to all that's available on the Kingston Campus, they also find a range of unique services at the campus in Providence, including a bookstore, library, Academic Skills Center, Office of Student Services, and Child Development Center. Please note: Providence is a non-residential campus. For more information on the range of opportunities at the Feinstein Providence Campus, call 401-277-5000 or visit [uri.edu/prov](http://uri.edu/prov).

## Confidentiality of Records

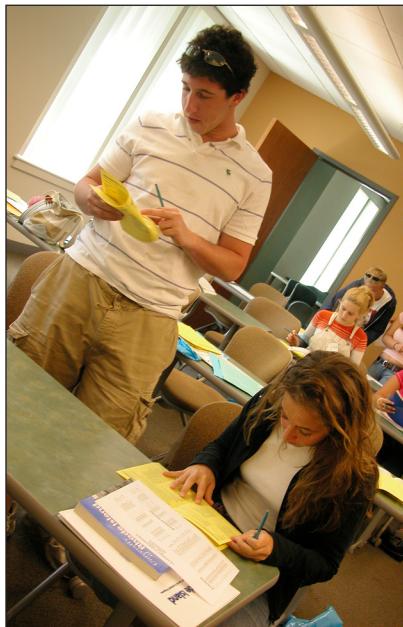
Procedures for the release and disclosure of student records maintained by the University of Rhode Island are in large measure governed by state and federal laws. Where the law is silent, the University is guided by the principle that the privacy of an individual is of great importance and that

as much information in a student's file as possible should be disclosed to the student on request. A current or former student has the right to inspect and review official records, files, and data directly related to that student. This right does not extend to applicants, those denied admission to the University, or those who were admitted but did not enroll. Some records are not available to students.

Third parties do not have access to personally identifiable records or information pertaining to a student without the written consent of the student who specifies that the records be released. Parents and spouses are considered third parties. However, changes in the law permit release of information in two cases. The University may notify parents or guardians of a student under 21 years of age about an alcohol or other drug violation; and the University may release information about violations involving violence or issues of safety and well-being.

Detailed guidelines for the release and disclosure of information from the student records are available from the Office of Student Life. These guidelines comply with the legal requirements of the Family Educational Rights and Privacy Act of 1974, as amended.

# ENROLLMENT SERVICES



**T**his section discusses the University's fees, expenses, financial aid, and registration for students.

Tuition, fees, and policies set forth in this catalog are subject to change without notice. All charges are billed by the semester and are due and payable upon receipt of the bill or by the due date indicated on the bill.

The amount of tuition and fees varies depending on whether the student is matriculated or nonmatriculated, on whether the student is enrolled in full- or part-time study, on whether the student is a legal resident of the state of Rhode Island, and on course sponsorship.

**Matriculated and Nonmatriculated Students.** All students who are seeking undergraduate degrees at the University must be admitted to *matriculated* status by the Undergraduate Admission Office. Students who have received their baccalaureates and who wish to earn graduate degrees at the University must be admitted by the Graduate School as *matriculated* students. Persons who wish to enroll for courses at the University but are not interested in pursuing degrees must register as *nonmatriculated* students. See the Undergraduate and Graduate admission sections for application procedures.

**Full-Time and Part-Time Students.** Matriculated undergraduate students enrolled in 12 or more credits per semester are considered *full-time students*. Matriculated graduate students enrolled in nine or more credits per semester and teaching and research assistants are also considered *full-time students*.

Matriculated undergraduate students enrolled in 1 to 11 credits are considered *part-time students*. Matriculated graduate students enrolled in 1 to 8 credits who are not teaching/research assistants are also considered *part-time students*.

**Resident, Nonresident, and Regional Students.** A student who is a *resident* of the state of Rhode Island pays the in-state fee, but a student from another state or a foreign country who is in Rhode Island primarily for educational purposes, even though he or she remains in the state during vacation periods, is considered a *nonresident* and pays the out-of-state fee.

A minor student's parents or legal guardians must have been residents of the state for one year immediately preceding the first class day of the first term of a student's registration, in order for that student to claim resident student status. A nonresident student who reaches 18 years of age while a student does not, by virtue of that fact alone, become a resident student.

An "emancipated student" must establish the same bona fide residency for in-state tuition exemption. An emancipated student is one who has attained the age of 18, and whose parents have entirely surrendered the right to the care, custody, and earnings of the student and have not claimed the student as a dependent for tax purposes for two years. If any of these conditions is not met, he or she is presumed to be an unemancipated student.

A member of the armed forces (on active duty) or his or her spouse stationed in the state on military orders shall be entitled to classification as a resident student during any semester, the first class day of which is encompassed by the orders.

Undergraduate students are classified as resident or nonresident by the dean of admission. A student may appeal the decision to the Board of Residency Review. Some international high school students who have lived in Rhode Island for at least one year and who meet particular requirements (laid out in the regulations adopted by the Board of Governors for Higher Education) may be eligible to pay *in-state* tuition and fees.

Graduate students are classified as resident or nonresident by the dean of the Graduate School. A certificate of residence is included in the graduate self-managed application package.

*Regional status* is granted to students enrolled in the New England Regional Student Program, whereby students from other New England states may enroll in designated programs at URI that are not offered in their own states (see page 32).

**Course Sponsorship.** Courses offered through the University's Kingston campus are considered Kingston-sponsored (except those offered at night). ASFCCE-sponsored courses are those courses offered through the Alan Shawn Feinstein College of Continuing Education at Kingston, Providence, and satellite locations.

**Matriculated Full-Time Students****Tuition Per Year**

<i>Undergraduate (ASFCCE and Kingston)</i>	
Rhode Island residents	\$6,440
Out-of-state residents	21,294
Regional students	
admitted prior to fall 2006	9,660
admitted fall 2006 or later	11,270
<i>Graduate (ASFCCE and Kingston)</i>	
Rhode Island residents	\$6,936
Out-of-state residents	19,044
Regional students	10,404

**Mandatory Fees Per Year**

(1) Full-time undergraduate students enrolled in *seven or more Kingston-sponsored credits*, graduate students enrolled in *five or more Kingston-sponsored credits*, and graduate teaching and research assistants:

<i>Undergraduate</i>	
Registration Fee	\$50
Student Health Services Fee	428
Student Services Fee	1,266
Accident/Sickness Insurance ( <i>may be waived with proof of comparable coverage</i> )	973
<b>TOTAL</b>	<b>\$2,717</b>
<i>Graduate</i>	
Registration Fee	\$50
Student Health Services Fee	428
Student Services Fee	1,030
Accident/Sickness Insurance ( <i>may be waived with proof of comparable coverage</i> )	973
<b>TOTAL</b>	<b>\$2,481</b>

(2) Full-time undergraduate students enrolled in *less than seven Kingston-sponsored credits* and graduate students enrolled in *less than five Kingston-sponsored credits*, who are not teaching or research assistants:

*Undergraduates and Graduates*

Registration Fee	\$50
ASFCCE Activity Fee	40
<b>TOTAL</b>	<b>\$90</b>

**Matriculated Part-Time Students****Tuition Per Credit**

<i>Undergraduate (ASFCCE and Kingston)</i>	
Rhode Island residents	\$268
Out-of-state residents	887
Regional students	
admitted prior to fall 2006	402
admitted fall 2006 or later	469
<i>Graduate (ASFCCE and Kingston)</i>	
Rhode Island residents	\$385
Out-of-state residents	1,058
Regional students	578

**Mandatory Fees Per Semester**

(1) Part-time undergraduate and graduate students enrolled in *only Kingston-sponsored courses*:

Registration Fee	\$25
Activity Fee ( <i>undergraduate students only</i> )	23
Graduate Tax ( <i>graduate students only</i> )	5
Student Services Fee	
Undergraduate	\$49 per credit
Graduate	\$48 per credit

(2) Part-time undergraduate and graduate students enrolled in *only ASFCCE-sponsored courses*:

ASFCCE Activity Fee	\$20
Registration Fee	25

(3) Part-time undergraduate and graduate students enrolled in *ASFCCE and Kingston-sponsored courses*:

ASFCCE Activity Fee	\$20
Registration Fee	25
Activity Fee ( <i>undergraduate students only</i> )	23
Graduate Tax ( <i>graduate students only</i> )	5
Student Services Fee ( <i>Kingston-sponsored courses only</i> )	
Undergraduate	\$49 per credit
Graduate	\$48 per credit

**Nonmatriculated Students****Tuition Per Credit**

	Resident	Non-Resident
001–499 Level Courses	\$268	\$887
500 Level and Above Courses	385	1,058

**Mandatory Fees Per Semester**

Registration Fee	\$ 25
Activity Tax	15
Student Services Fee ( <i>Kingston-sponsored courses only</i> )	
Undergraduate	\$49 per credit
Graduate	\$48 per credit

**Mandatory Fees**

**Student Services Fee.** This fee is mandatory for all full-time students enrolled at the Kingston campus, both undergraduate and graduate. The student services fee covers the cost of the Memorial Union, transportation, and capital projects. The undergraduate fee supports funds that are distributed to the Student Senate for a wide variety of student programs and activities. It also supports athletics and recreation. The fee paid by full-time graduate students supports the above and, instead of the undergraduate Student Senate, the Graduate Student Association.

**Health Services Fee.** The health fee is mandatory for all full-time Kingston undergraduate and graduate students, and optional for matriculating students at the Alan Shawn Feinstein College of Continuing Education. All international students are assessed this fee regardless of enrollment location. Part-time, matriculating students who choose to receive their health care at URI Health Services can be assessed this fee upon request, as well as the student accident/sickness insurance fee (which may be waived with proof of comparable coverage). The health fee covers the cost of the following:

- routine office visits with URI staff providers (the full cost of visits if insurance doesn't cover the cost and/or co-pay expenses in situations where insurance covers a portion),
- ambulance/emergency transport services (by URI EMS),

- pharmacy (most over-the-counter medicines, small co-pay for prescriptions for acute care, medications for chronic conditions at 50 percent of cost),
- administrative services provided at Health Services, and
- health education.

**Accident/Sickness Insurance.** It is URI policy that full-time Kingston students as well as all international students and their dependents have current health insurance to provide coverage for unexpected, extended, and expensive care resulting from accidents and illnesses that are not covered by the Student Health Services fee. All full-time Kingston students and all international students and their dependents are required to purchase school health insurance unless evidence of comparable coverage in another plan is provided to the University through a completed waiver form. Waivers are done on line at [uri.edu/health](http://uri.edu/health). Questions should be referred to the Health Services Insurance Office at 401-874-4755.

**To waive the Accident/Sickness Insurance, a student must complete and electronically submit the waiver to Health Services each year, prior to the end of the add period (the first two weeks of classes). Unless the waiver is received and accepted, the student is responsible for the billed amount.** The Accident/Sickness Insurance is optional for non-international part-time matriculating students and ASFCCE matriculating students. Students who elect insurance coverage through the University are also required to pay the Health Services fee each semester that they are registered students, regardless of the number of credits they are carrying.

## Additional Fees

**Books and Supplies.** All students—both undergraduate and graduate—should expect extra expenses each academic year for books and supplies and should allow for additional expenditures for travel and personal needs.

**Credit Overload.** A credit overload fee will be charged to all matriculated undergraduate students who register and/or enroll in excess of 19 credits. This fee is equivalent to the per-credit rate given for part-time undergraduate students. Matriculated graduate students who register and/or enroll in excess of 15 credits will be billed at the per-credit rate given for graduate students. Students with combined enrollment at both the Kingston and ASFCCE campuses will also be assessed the credit overload fee if enrollment exceeds the credit limits stated above.

**Enrollment Deposit.** An enrollment deposit is required from all Kingston undergraduate students accepted and is applied to the first-term bill. In-state students pay a \$150 deposit; out-of-state and regional students pay a \$300 deposit. The fall term enrollment deposit is 100 percent refundable through May 1, 50 percent refundable through June 1, or 20 percent refundable through August 1, provided that the Admission Office is notified in writing of the student's intention not to enroll. The spring term enrollment deposit is *not* refundable.

**Returning Student Deposit.** Undergraduate students returning after withdrawal are required to remit a nonrefundable returning student deposit of \$50.

**Off-Campus Study.** Undergraduate students taking courses at another institution for credit at URI pay a fee of \$293 per semester. (See page 27.)

**Graduate Continuous Registration.** Graduate students maintaining continuous enrollment and registered for no credit (CRG 999) are required to pay a fee of \$410 per semester.

**Transcripts.** A transcript service fee of \$35 is assessed to all students in their first semester of enrollment at the University.

**Courses.** A laboratory/clinical fee of \$55 will be charged for each undergraduate and graduate laboratory or clinical course.

Undergraduate engineering students pay a program fee of \$395 per semester for full-time students, \$33 per credit for

part-time students. Pharm.D. students pay a program fee of \$2,250 per semester commencing in their third year.

Expenses connected with class trips and practice teaching are charged to the students concerned.

Students taking applied music courses, except for composition, are charged an additional fee of \$105 for a one-credit course (half hour of a private lesson per week) and \$200 for courses offering two, three, four, or six credits (one hour of a private lesson per week). Applied music courses for which students are charged an additional fee are MUS 110, 210, 310, 410, and 510.

Beginning in the sophomore year, student nurses must purchase authorized uniforms and nursing equipment. The approximate cost is \$300.

**Graduation.** All newly matriculated students will be charged a one-time \$45 fee for graduation documents. In addition, master's degree candidates must pay a thesis-binding fee of \$18, and doctoral candidates must pay dissertation-binding and microfilming fees of \$88. These fees are due before candidates submit their theses or dissertations for approval by the Graduate School.

## Late and Special Fees

**Late Registration.** A late registration fee of \$75 is charged to students whose registration is not completed before the first Monday following the first day of classes.

**Late Payment.** Unpaid balances following the term bill due date are subject to late payment/billing penalties which are based upon the outstanding amount due. The penalty is also applied to students who register late effective as of the end of the add period (first two weeks of classes) until date of registration and payment. The late payment fee is not cancelled nor reduced without presentation of written evidence of University error signed by an official of the University. Late payment fees are: \$10 per month if the balance is over \$50 and under \$400; \$15 per month if the balance is between \$400 and \$999.99; \$25 per month if the balance is \$1,000 or more.

**Returned Check.** A \$20 returned check fee is assessed with each check not accepted for deposit and returned by the bank.

**University Monthly Payment Plan.** The University offers a monthly payment plan to assist students and parents in meeting term bill obligations. A nonrefundable application fee is assessed upon enrollment. Please visit the Enrollment Services Web site at [uri.edu/es](http://uri.edu/es) to review the current monthly payment plan application fees.

**Partial Payment.** A \$30 fee is assessed when partial payments are received following the term bill due date.

**Collection Agencies.** Term bills which are not fully paid by the end of the semester are subject to collection activity by outside agencies.

**Reassessment of Fees Policy.** Fees are reassessed and adjusted according to credit enrollment, student status, residency, course level, and course sponsorship. This results from drop/add transactions and status changes processed by the registrar during the add period. The dropping of credits after the add period will not reduce term bills. Students anticipating fee adjustments must complete all drop/add transactions by the reassessment deadline. This policy pertains but is not limited to downward billing adjustments, including credit overload courses dropped; change in student status from full-time to part-time; part-time student dropping courses; and the assessment of program fees and lab/clinical fees, if charged.

## Tuition Waivers

The University of Rhode Island accepts tuition waivers from senior citizens and unemployed individuals; prerequisites are described below. Students who qualify for waivers must apply for financial aid, and any aid received (except loans) must be applied toward the amount waived. Admission into particular courses is granted on a space-available basis and at the discretion of the institution. All other costs of attendance are to be paid by the individual student.

**For Senior Citizens.** Any Rhode Island resident senior citizen who submits evidence of being 60 years of age or over and of having a household income of less than three times the federal poverty level is allowed to take courses at any public institution of higher education in the state with the tuition waived.

**For the Unemployed.** Any individual who submits evidence of currently receiving unemployment benefits from the state of Rhode Island, of having a household income of less than three times the federal poverty level, and of not being claimed as a dependent by a parent (or someone else) will be allowed to pursue course work at any public institution of higher education in Rhode Island with the tuition and registration fee waived; this waiver also applies to any Rhode Island resident who submits evidence of residency and of currently receiving unemployment benefits in another state. To be eligible for the waiver, the student must have been collecting benefits within 60 days before the first day of classes.

## Housing and Dining Options and Fees

A comprehensive description of the University's undergraduate on-campus residence halls, suites, and apartments, and all associated housing fees, is available at [housing.uri.edu](http://housing.uri.edu). To speak to a representative about on-campus housing for undergraduate students, please call 401-874-4151. Please note that residents of the University's residence halls and suites are required to purchase a Resident Meal Plan. For more information on resident meal plan options and fees, please visit [uri.edu/dining](http://uri.edu/dining). To speak to a representative about the University's dining plans, please call 401-874-2055.

**Housing and Dining Contract.** The University's Housing and Dining Contract is an annual and binding contract that is in effect for the entire academic year. Please note that a non-refundable housing fee is required at the time of application to reserve a room. The housing fee is \$100

for new students and \$250 for continuing students. This housing application fee will be applied toward the resident's annual housing fee. Housing and dining fees for residents of the University's residence halls, suites, and apartments will appear on each resident's term bill; payment is due upon receipt of this bill. Checks should be made payable to the University of Rhode Island and should be sent or delivered to the Office of Enrollment Services.

Residents who elect to vacate the University's residence halls, suites, or apartments before the end of the contract period, for any reason other than dismissal from the University, will be assessed a contract cancellation fee for both the housing and dining portions of their contract. In addition, they will be billed for their actual use of the housing facilities as well as their dining plan, in accordance with the respective housing and dining refund policy.

URI is a nonsectarian institution, and resources are not available to construct special diet kitchens for religious, health, or personal reasons. A nutritionist reviews extreme medical conditions. Some medical conditions may be accommodated. Residents requesting a medical variance from the meal plan requirement must submit for approval a Medical Variance Report, completed by a physician, to URI Dining Services. To obtain this application form, contact the Campus Access Office at 401-874-2055. The University housing and dining systems operate on a computerized entry system using URI student ID cards and hand geometry readers. The student ID must be presented at all resident dining facilities.

## Communications Fees

There is a \$532 communications fee assessed to each student in all dormitories/apartments except the condominiums.

## University Refund Policies

Refunds of payments made or reductions in amounts due to the University shall be made to students who officially withdraw or take a leave of absence according

to the following scale: during the first two weeks, 80 percent; during the third week, 60 percent; during the fourth week, 40 percent; during the fifth week, 20 percent; after five weeks, none.

Students receiving Federal Title IV funds, i.e., Federal Pell grants, Direct Stafford Loans, Perkins loans, Federal PLUS loans, Federal Supplemental Educational Opportunity grants, or other Title IV assistance programs are subject to the federal return of funds regulation. The regulation states that Federal Title IV funds must be returned according to a pro-rata formula based upon the amount of time spent in school up to the 60th percentile of attendance. Thereafter, federal disbursements are not adjusted. For example:

Assume that a student withdraws during the third week of school after attending 20 days and the term bill has been paid entirely by a Direct Stafford loan. If the semester consists of 100 days, 80 percent of the loan must be returned to the loan fund since the student only attended 20 percent of the semester. However, the student's bill is reduced by only 60 percent per the University's refund policy as stated above. The student will be responsible for the difference.

Personal payments and outside scholarships are not considered for refund until the term bill balance is fully paid.

Students who take a leave of absence are subject to the same federal return of Title IV funds policy as are students withdrawing from the University.

**Attendance Period.** For refund purposes under both policies, the attendance period begins on the first day of classes and ends on the official date of withdrawal or leave of absence. If an official date is not known, the last known date of attendance is used. Students who withdraw or take a leave of absence during the add period (the first two weeks of classes) are assessed tuition and fees based upon the highest number of credits for which they are registered during this period.

The Accident/Sickness Insurance fee is not refundable unless the fee is waived, regardless of the date of withdrawal, since

the student is covered for the entire academic year. The fee is cancelled, however, if the student withdraws prior to the first day of classes.

**Indebtedness to the University.** Failure to make full payment of all required fees or to resolve other debts to the University (for example, unreturned athletic equipment, overdue short-term or emergency loans, lost library books, debts to the Department of Housing and Residential Life for damages, and obligations required by the University Student Discipline System) may result in denial of registration for the following semester and/or disenrollment. Appropriate departments will provide the student with notice of the debt, reason for it, and a review, if requested. Students must fulfill all financial obligations to the University before receiving transcripts or a diploma.

## Financial Aid

Financial aid is money made available from federal, state, local, or private sources that helps students attend the postsecondary institutions of their choice. At the University of Rhode Island, these varied sources are administered by Enrollment Services in Green Hall. URI's financial aid programs are designed to serve students from the widest possible range of society, and all students are encouraged to apply.

In most cases, financial aid will be awarded in a "package" of grants (which do *not* have to be repaid), loans (which have to be repaid), and student employment opportunities (part-time jobs while attending school). The purpose is to assist the students in meeting the costs of attending the University. To continue receiving financial aid, it is necessary to reapply and demonstrate sufficient financial need each year as well as to maintain satisfactory academic progress.

Financial aid to students is awarded without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and without discrimination against disabled and Vietnam-era veterans.

**Financial Need.** A student does not have to be from a low-income family to qualify for financial aid, but does have to have "financial need." "Need" is the difference between what it costs to attend the University and what the student and family can contribute from financial resources. Parents, insofar as they are able, are expected to bear primary responsibility for financing a child's college education, and the student is also expected to earn a portion of the resources for college expenses, usually through summer employment.

**Eligibility.** Only U.S. citizens or eligible non-citizens are eligible to apply for financial aid. Foreign students desiring information about financial assistance should contact URI's Office of International Students and Scholars.

To be considered for financial aid, a person must have been accepted and enrolled at least half time (6 credits for undergraduates, 4.5 for graduate students) as a matriculated student at the University. Enrolled students must be making satisfactory progress toward their degrees according to the University's policy on satisfactory progress (see page 25).

In general, a student who already has received a baccalaureate degree is considered eligible for only those aid programs listed as available to graduate students. This applies even if the student is pursuing a second undergraduate degree. For more information, please check with an Enrollment Services counselor.

**Application Procedure.** To apply for financial aid, students must complete a Free Application for Federal Student Aid (FAFSA), available online at [fafsa.ed.gov](http://fafsa.ed.gov). This form is also used to apply for state scholarships, including those for Rhode Island and Massachusetts. Residents of other states should check with their state scholarship or grant authority to inquire if another form is needed to apply for state scholarship funds.

The awarding of financial aid for the current academic year may require validation and documentation of all information submitted to Student Financial Assistance. Therefore, students must be

prepared to submit the following information if asked: signed copies of their own and their parents' last U.S. income tax returns 1040/1040A/1040EZ. When and if requested by Student Financial Assistance and Employment Services, all tax schedules must also be included.

**Application Priority Dates.** The Free Application for Federal Student Aid should be filed online at [fafsa.ed.gov](https://fafsa.ed.gov) after January 1, and no later than March 1. Applications completed on or before March 1 will receive first consideration for financial aid awards; however, applications will be processed as long as funds remain available.

### **Federal Aid Available**

**Federal Pell Grants.** The Pell Grant, available to undergraduates, is designed to form the foundation of all financial aid received. Each applicant is mailed a set of Student Aid Reports, a copy of which is electronically sent to Enrollment Services if URI 003414 was put on the FAFSA. The amount of the Pell Grant is calculated according to the cost of attendance, the number of credits for which the student enrolls, and the Pell Grant Index printed on the Student Aid Report.

**Federal Supplemental Educational Opportunity Grant.** This program is intended to assist undergraduate students with the greatest financial need. First priority is given to students receiving Pell Grants.

**Federal Perkins Loan.** Eligibility is based on exceptional financial need. These loans have a simple interest rate of five percent annually. Interest does not accrue until nine months after graduation, termination of studies, or enrollment for less than half time.

**Nursing Student Loan Program.** This program is available to undergraduate students enrolled in the College of Nursing. Long-term, low-interest loans become due and payable nine months after graduation or termination of nursing studies. The loans are designed to help financially needy students attain careers in nursing.

**Health Professions Student Loan Program.** This loan program is restricted to undergraduate students with financial need majoring in pharmacy.

**Federal Work-Study Program.** This federally supported program provides undergraduates with part-time employment during the school term and full-time employment during vacation periods. The jobs may be either with University departments, or with off-campus, nonprofit, nonsectarian, and nonpolitical agencies. Other institutionally funded employment is also available.

**Federal William D. Ford Direct Loan.** All students who complete the FAFSA can participate in the William D. Ford Direct Loan program. Those students who meet the financial need criteria may receive in whole or in part a subsidized loan where the federal government pays all interest until six months after graduation, withdrawal, or a drop in enrollment status to less than half time. Unsubsidized loans are available for those students who do not qualify for the need-based subsidized William D. Ford loan. Those eligible to borrow under the unsubsidized William D. Ford Direct Loan program include independent undergraduate students, graduate and professional students, and certain dependent undergraduate students. The same terms and conditions as for subsidized William D. Ford loans apply, except that the borrower is responsible for the interest that accrues while the student is still in school.

**Federal William D. Ford Direct Loan for Parents.** Parents who have good credit may borrow up to the cost of education minus estimated and actual financial aid by submitting an application to Enrollment Services. If the loan is approved, it will be disbursed in multiple installments, usually at the beginning of each semester.

### **University Aid Available**

**University Grant.** The University provides grants to over 1,000 undergraduate students. To be awarded a University Grant, the student must demonstrate financial need and a satisfactory academic record.

**Arthur L. Hardge Memorial Grant.** This grant is awarded to economically and socially disadvantaged undergraduate residents of Rhode Island who participate in Special Programs for Talent Development.

**University Scholarships.** Scholarship awards require not only financial need but evidence of high academic potential. Some scholarships have specific restrictions, such as place of residence, major, and class year. A list of available scholarships can be found at [uri.edu/catalog](https://uri.edu/catalog).

**Athletic Grants.** These grants are made on the recommendation of the Athletics Department to athletes who meet established qualifications. These awards are based on athletic ability rather than on need. Students interested in such assistance should contact the department.

**Regular Student Employment.** Positions funded by the University are available to more than 1,500 undergraduate and graduate students. Job postings are available at [uri.edu/es](https://uri.edu/es).

**University Loans.** Emergency loans ranging from \$10–200 are available to full-time undergraduate and graduate students. These loans are short-term in nature (14–90 days), and can be made only when there is a means of repayment. Application forms are available in Enrollment Services.

### **State and Other Sources of Aid**

Undergraduate residents of Rhode Island are encouraged to apply for state scholarships or grants. While both are based on need, the scholarships also require a strong academic record in high school. The Rhode Island State Scholarship and Grant Program is administered by the Rhode Island Higher Education Assistance Authority. Other states offer similar programs; for more information, contact your state's scholarship agency.

There are many additional sources of financial aid available to students who qualify: scholarships from private organizations, clubs, labor unions, fraternities, sororities, and businesses. Students should apply directly to the source if they believe

they qualify. Also see the URI catalog online ([uri.edu/catalog](http://uri.edu/catalog)) for a list of loans, scholarships, and special awards available to undergraduate and graduate students.

**Policy on Satisfactory Academic Progress (SAP).** Federal regulations require all institutions that administer Title IV student assistance programs to monitor the academic progress towards a degree or certificate of students applying for funds. All University of Rhode Island students who have completed a Free Application for Federal Student Aid (FAFSA) and wish to be considered for Title IV federal aid as well as selected other types of assistance must meet the criteria stated in the policy. Programs governed by these regulations include:

- Federal Pell Grant
- Federal Work Study
- Federal Supplemental Educational Opportunity Grant
- Federal Perkins Loan
- Health Professions Loan
- Nursing Student Loan
- William D. Ford Federal Direct Subsidized Stafford Loan
- William D. Ford Federal Direct Unsubsidized Stafford Loan
- William D. Ford Federal Direct Parent Loan for Undergraduate Students (PLUS)
- Most private loans
- University of Rhode Island grant and scholarship programs (including Centennial and Talent Development programs)
- R.I. State Scholarship programs (including Academic Promise and Children's Crusade)

**Eligibility.** Your financial aid eligibility is based on satisfactory academic progress (SAP) standards that the University of Rhode Island's office of Enrollment Services is required by the U.S. Department of Education to establish, publish, and apply. The office of Enrollment Services measures your academic performance and enforces SAP standards to ensure that you, as a financial aid recipient, progress toward graduation. If you fail to meet these standards, you become ineligible to receive financial aid until you comply with all requirements.

Financial aid recipients will be reviewed for satisfactory progress at the end of the spring semester after grades are posted. A student who does not meet the satisfactory academic progress standards will be terminated from financial aid assistance. An aid-terminated student is **ineligible for any further financial aid**, including student loans, until satisfactory academic progress is re-established. Readmission to a program or removal from academic probation does not automatically constitute eligibility for federal financial aid.

**SAP Standards: Undergraduate Students.** In addition to maintaining good standing within your college, your academic performance must meet two main SAP components:

*Qualitative Standard.* This component is represented by your cumulative grade point average. Your cumulative GPA must be a minimum of 2.00 after the successful completion of 60 credits or your fourth term of enrollment, whichever comes first.

*Quantitative Standard.* The quantitative component requires you to complete your degree within a maximum timeframe. The ratio between attempted and completed credits determines your credit completion ratio. You are eligible to receive financial aid for a maximum timeframe of 150 percent of the published degree credits required to complete your program. For example, if your undergraduate degree program requires 120 degree credits, you are eligible for financial aid up to 180 attempted credits (program restrictions apply). Each year, your cumulative credit completion ratio is calculated to ensure that you have earned at least 67 percent of the credits you attempted to maintain your aid eligibility. Grades of Incomplete and NW are included in attempted credits but not in credits earned.

*Transfer Credits.* These credits are counted in the total earned credits.

*Withdrawals.* All credits for which a student is registered beyond the drop period will be included in the measurement.

*Repeated Courses.* If you repeat a course, credits for each time you register will be added to the attempted/earned credit

totals. However, only the most recent grade received will be used in the calculation of your cumulative GPA.

**SAP Standards: Graduate Students.** In addition to maintaining good standing within your college, your academic performance must meet two main SAP components:

*Qualitative Standard.* As a graduate student, you must maintain a minimum cumulative GPA of 3.00 (unless your college requires a higher GPA) for the entire enrollment period. You are required to maintain at least a 2.00 GPA if you are a professional student in the Pharmacy program.

*Quantitative Standard.* The quantitative component requires you to complete your degree within a maximum timeframe.

As a Ph.D. candidate, you must complete your degree within seven calendar years of being admitted to your doctoral program (program restrictions apply).

As a graduate student pursuing a master's degree, you are eligible to receive financial aid for a maximum timeframe of five years after the date you are first enrolled as a graduate student at the University.

Your progress within this maximum timeframe will be reviewed annually at the end of each spring semester. At this time, your cumulative credit completion ratio is determined to ensure that you have completed at least 67 percent of all credits attempted to maintain your financial aid eligibility. Grades of Incomplete and NW are included in attempted credits but not in credits earned. If you are unable to complete your degree within this timeframe, you may appeal for an exemption.

Master's and doctoral students who have completed all course requirements including thesis research shall be considered to be making satisfactory progress at least at the half-time rate if they are registered for at least one thesis credit and have written permission from the dean of the graduate school.

**SAP Appeal Process.** A student who is declared ineligible to receive aid for not maintaining SAP may appeal the decision to the SAP committee within 15 days of receipt of the notification. If there are miti-

gating circumstances that resulted in the student's inability to make SAP, the student should write a letter of appeal documenting the circumstances and submit the letter to the Satisfactory Progress Appeals Committee, c/o Enrollment Services, 35 Campus Avenue, Kingston, RI 02881.

## Graduate Fellowships, Assistantships, and Scholarships

Detailed information (stipends, allowances, tenure, etc.) on graduate fellowships, assistantships, and scholarships is available from the Graduate School Office and online at [uri.edu/gsadmis](http://uri.edu/gsadmis). Fellowships and scholarships are awarded by the Graduate School to students selected from nominations submitted by department chairpersons. Students are advised to request nomination for these awards by the chairperson of the department in which they plan to study or in which they are currently enrolled.

Graduate assistants are expected to register for a minimum of six and a maximum of 12 credits per semester. Students who hold scholarships, fellowships, or assistantships are not eligible for additional employment unless written permission is received from the Graduate School.

Graduate students have access to a national computerized database of fellowships and other financial assistance opportunities available to students pursuing advanced degrees, completing dissertation research, or seeking postdoctoral positions.

**Fellowships.** Fellowships are awarded to graduate students in recognition of their achievement and promise as scholars. They are intended to enable students to pursue graduate studies and research without rendering any service to the University.

*URI Diversity Graduate Fellowships* are awarded by the Graduate School to students from minority and underrepresented groups. *URI Foundation Minority Fellowships* are also available to students from minority and underrepresented groups, with nominations usually made by departments to the Graduate School.

*Special Fellowships* are supported by various industrial firms, private foundations, and individuals, and are usually restricted to students in particular areas of study and research. The stipends and supplemental allowances of these fellowships are not uniform.

URI Fellows receive a stipend for the academic year and have tuition, health insurance, and the registration fee paid from University funds. URI Fellows are responsible for the remaining fees. Those wishing to be considered for fellowships must have their application file completed no later than February 1.

**Graduate Teaching Assistantships and Research Assistantships.** Assistantships are awarded to full-time graduate students to provide them with teaching and research training. Assistants may be required to provide service for up to 20 hours per week. Appointments are initiated by department chairpersons. To be eligible for such appointments, students must first be admitted as degree candidates. Applications for assistantships should be completed by February 1. Appointments are announced in early April.

*Departmental Teaching Assistants* assist, under supervision, with department instructional and/or research activities. No more than ten hours per week will be in classroom contact.

*Research Assistants* are assigned to individual research projects sponsored either by the University or an outside agency. On supported research contracts and grants, the graduate research assistants are expected to devote 20 hours per week to research activities.

Teaching and research assistants receive a stipend for the academic year. In addition, tuition (12 credits maximum), the registration fee, and health insurance are paid from University funds for each semester of the academic year of the appointment. The student is responsible for the remaining fees. Additional remuneration is given for appointments during the summer, although this cannot be guaranteed. Stipends and tuition remissions for students appointed

to partial assistantships will be prorated for the period of the appointment. The student will be responsible for the remainder of the full-time tuition and fees. The same policy applies to assistantships terminated during the academic year.

**Tuition Scholarships.** These scholarships cover tuition and registration fee and are awarded by the Graduate School from University funds. These scholarships are awarded to qualified students demonstrating financial need. Nominations for these scholarships are made by individual departments.

## Registration

All students must register for courses through Enrollment Services via the e-Campus system (Web) in order to be properly enrolled.

Matriculated (official degree-seeking) students generally register in April and October for the following semester. However, freshmen entering in the fall semester may register at specified dates during the summer as part of summer orientation.

Students are expected to register for courses before classes begin. Those who are unable to do so may enroll as late registrants via the e-Campus system or at Enrollment Services during the first two weeks of classes. A late registration fee shall be charged to students whose registration is not completed before the first Monday following the first day of classes (see page 21). Additional information is available from Enrollment Services.

**Nonmatriculating Students.** The Non-Degree Student Application Form is available on the Web at ; or contact Enrollment Services for registration instructions. Registration for nonmatriculating students begins after matriculated students have registered.

**Schedule of Courses.** The *Schedule of Courses & Classroom Directory* is available on e-Campus in April and October for the fall and spring semesters. The University reserves the right to cancel courses offered in the *Schedule*.

**Payment of Fees.** Arrangements must be made with Enrollment Services for complete and timely payment of tuition and/or fees. If during the semester it becomes apparent that a student has not met his or her financial responsibilities to the University, sanctions will be imposed. Sanctioned students may not be allowed to receive transcripts or register for future semesters.

**Drop and Add.** Students are permitted to continue to add courses through the first two weeks of classes only. Courses offered by the Alan Shawn Feinstein College of Continuing Education may be added by the prescribed deadline.

Students may drop courses by the drop deadline according to official procedures. However, courses dropped after the end of the second week of classes will not affect the fees that have been assessed (see page 21).

A student may drop a course after the end of the drop period only in exceptional circumstances and with authorization of the dean of his or her college.

**Auditing.** When you audit, you have permission to attend a course without taking it for credit. (Auditing is not permitted in noncredit courses.) You may be admitted to a class on a space-available basis with the instructor's consent as indicated by his or her signature on an audit authorization form, which must be filed in Enrollment Services before the end of the add period. The instructor will determine the extent to which you may participate in class activities. Your name will not appear on official class rosters, and the course will not be noted on your grade report or permanent academic record. Note: You must be enrolled in at least one other course to be permitted to audit a course without additional fees.

**Off-Campus Study.** A full-time student who wishes to study at another college and use that course work to satisfy graduation requirements at URI may register for off-campus study. The student must obtain signed approval for the off-campus courses from the dean of his or her college. Off-campus study includes summer sessions, one or two semesters at another American university, or study abroad. A student may not ordinarily study off campus during senior year. Students who wish to maintain registration eligibility while studying off campus must register for off-campus study for each semester of absence from URI, or take an official leave of absence for that period.

**Veterans Benefits.** Full information describing these can be obtained from your base education officer or the VA Regional Office, 380 Westminster Street, Providence, RI 02903; in the U.S., call 1-800-827-1000.

Veterans enrolled in Kingston who are eligible to receive VA educational benefits must notify Enrollment Services in person. In order to satisfy VA regulations, students who receive VA educational benefits must report all changes in academic status to the veterans registration clerk in Enrollment Services. Veterans enrolled in courses through the Alan Shawn Feinstein College of Continuing Education must be certified by that college.

Recipients of VA educational benefits are governed by the same University policies as are all other students.

**Transcripts.** Students can obtain a copy of their transcripts via the e-Campus system or by submitting a written request to Enrollment Services. Transcripts will not be issued to students who have unpaid financial obligations to the University.

**Change of Address.** It is the responsibility of the student to report changes of local or home address to Enrollment Services. Students may update their address information through the e-Campus system.

**Required Identification.** In order to obtain a University ID card and be certified for employment, students must possess a photo identification card, such as a driver's license, and a certified copy of their birth certificate. A valid passport serves both purposes.

**Readmission.** Students formerly enrolled at the University and seeking re-entry may obtain applications for readmission at the Office of Enrollment Services. Readmitted students must make a \$50 advance deposit. All applications for readmission must be submitted to Enrollment Services no later than August 15 for the fall semester, and December 31 for the spring semester.

**Email.** The University of Rhode Island has established email as one of the official means of communication with faculty, staff, and students on important academic and administrative matters. To ensure that each member of the University has access to this important form of communication and that students can be reached through a standardized channel when needed, faculty and staff are asked to activate an email account (address) on the University's mail.uri.edu server. Students are required to do so. All official University communications will be sent to this official University email address.

# UNDERGRADUATE ADMISSION

The Office of Admission strives each year to enroll a diverse undergraduate class of freshman and transfer students from the state of Rhode Island, as well as from other states and countries. We seek to enroll students who are prepared to be successful at the University, who possess a variety of talents and strengths, who are committed to becoming contributing members of the community, and who will be stimulated and challenged by doing undergraduate work in an environment that includes scholarly research and graduate study.

Students are selected for enrollment primarily on the basis of their academic competence; without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation; and without discrimination against disabled and Vietnam-era veterans. The University has been authorized under federal law to enroll nonimmigrant foreign students.

**Kingston Campus.** All freshmen pursuing four- or six-year degree programs at the Kingston Campus are admitted to University College, a college of advising and academic student services. Many who are undecided about their choice of major use their time in University College to explore their interests before declaring a major. Students who have identified their prospective majors are assigned faculty advisors in that area and follow their chosen course of study while in University College. URI evaluates applicants' credentials in terms of their stated prospective majors. Several programs are highly selective due to limited enrollment capacity.

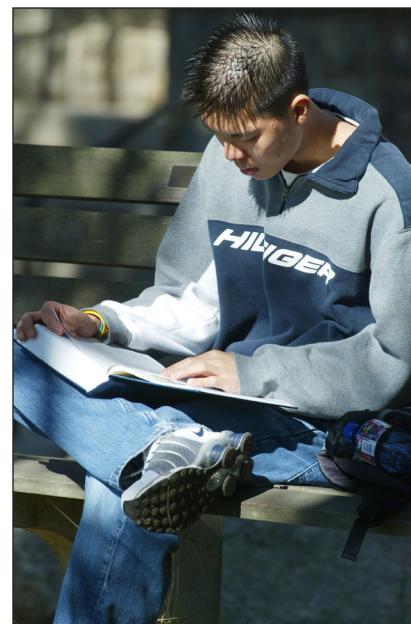
**Information Sessions.** The Admission staff offers information sessions followed by a campus tour for prospective students and their families. Reservations are **not** required. Call ahead to confirm available dates: 401-874-7000, or check the Web site, [uri.edu/admission](http://uri.edu/admission).

**Campus Tours.** Students conduct walking tours of the campus for visitors Monday through Saturday while classes are in session. Group tours for high schools and other organizations may also be arranged. For more information, call 401-874-7000 or refer to [uri.edu/admission](http://uri.edu/admission). Tours of the Narragansett Bay Campus and the Graduate School of Oceanography may also be arranged. Call 401-874-6211 for details.

**Providence Campus.** At the University's Feinstein Providence campus, students will discover several options:

- For the adult student, the Alan Shawn Feinstein College of Continuing Education (ASFCEE).
- For the high school senior seeking an urban education, the URI "Admission Option."
- For those interested in a fast track to a career in biotechnology, the Biotechnology Manufacturing Program.

Applicants to ASFCEE are admitted under "performance-based admission" (PBA). For URI applicants without recent evidence of academic success, but with the potential to successfully complete college-level work, this represents an opportunity to pursue a college degree. PBA is available to applicants whose last educational experience occurred at least three years ago, and



who have graduated from high school or earned an equivalency diploma. PBA is limited to students applying to the Alan Shawn Feinstein College of Continuing Education for undergraduate degree programs. For more information, contact an academic advisor at the University's Providence campus, Room 245, 401-277-5160. You can find more information on offerings through ASFCEE on page 74 of this catalog. Students intending to transfer from Providence to programs at the Kingston campus should be aware of all requirements and discuss them with their advisor.

The "Admission Option" for high school seniors offers the opportunity to complete a four-year degree at our non-residential campus. Three majors are offered through this option: Communications, Psychology, and Human Development and Family Studies. Application for this option is made directly through the URI Undergraduate Admission office.

The Biotechnology Manufacturing Program is a Bachelor of Science degree offered in an intensive format that culminates in accelerated industry-based employment opportunities. See page 95 for more information or call 401-277-5050.

## Freshman Admission Requirements

Admission to URI is competitive, and primary emphasis in the review process is placed on the student's high school record, quality of courses taken, grades earned, and performance on standardized tests (SAT or ACT). Extracurricular activities, alumni tradition, a personal essay, and letters of recommendation are also considered. The students offered admission for fall 2007 presented an average class rank in the top 25 percent of their high school class, with SAT scores of approximately 1,670 combined.

The SAT or ACT test is required for freshman candidates. Each candidate is given individual consideration; however, a minimum of 18 units of college preparatory work is expected: four units in English, three in algebra and plane geometry, two in a physical or natural science, two in history or a social science, two in the same foreign language, and additional units that meet the requirements of the college in which the candidate expects to major. All students are encouraged to select their additional units from the arts, humanities and foreign languages, mathematics, social sciences, or laboratory sciences. Candidates for the College of Engineering, the College of Business Administration, and majors in chemistry, computer science, and physics must complete four units of mathematics (precalculus or trigonometry); candidates for the College of Engineering should also select chemistry and physics. Applicants to the Bachelor of Music degree program must audition and must contact the Department of Music for specific requirements.

Students presenting official GED results in lieu of a high school diploma must present secondary school or college records

that show successful completion of all the admission requirements listed here.

**International Candidates.** International candidates must submit original or certified copies of original documents (in the original language) and notarized translations in English. Candidates must meet the University's academic requirements. They must show that they possess funds for their first year and that funds for subsequent years will be available. If government or reserve bank permission is required to transfer funds from the student's country to the United States, a notarized copy of the permission is required. No financial aid is available to international students.

Inquiries from international students concerning nonimmigrant visas, transfers, funding, etc., should be sent to URI's Office of International Students and Scholars, 37 Lower College Road, Kingston, RI 02881; e-mail: [issoff@etal.uri.edu](mailto:issoff@etal.uri.edu).

**Homeschooled Applicants.** Homeschooled applicants must meet the same entrance requirements as students who have followed a traditional schooling profile. We consider the following information when making a determination of admission to the freshman class:

- Comparative competencies of content through the completion of 18 prescribed Carnegie units of work displayed on an official transcript
- Standardized testing that supports the content competencies
- Earned Grade Point Average

The required material can be presented in several ways:

- Submission of a transcript from a home-schooling agency that supplies curriculum outlines and reviews and grades completed work. The University will require SAT subject exams if specific course content is unclear
- Submission of the results of SAT subject exams in the following areas to demonstrate competencies: American history or world history; math level 1C; biology, chemistry, or physics (select two); any foreign language

- Submission of a transcript of college courses that displays the prescribed units of work
- Submission of the results of Advanced Placement or CLEP examinations

## Application Procedures

Students should discuss their plans for study at the University with their guidance counselors as early as possible to establish realistic goals and program selections. URI admission counselors will be glad to correspond with students about individual circumstances. Requests for application forms and information should be sent to Undergraduate Admission, 14 Upper College Road, Kingston, RI 02881-1322. You may also call 401-874-7000, or visit the Undergraduate Admission Web page at [uri.edu/admission](http://uri.edu/admission).

Students are enrolled at the beginning of the fall semester in September and at the beginning of the spring semester in January. *Not all programs enroll new students in January.* High school seniors are urged to submit applications, including first quarter grades, early in the academic year, since URI reviews applications on a continuing basis as soon as complete credentials are submitted. Applicants are notified as soon as decisions are made. The closing deadline for fall term freshman applications is February 1. Transfer applications are due by May 1. The closing deadline for spring term applications is November 1. Enrollment deposits are due by May 1.

## Early Action and Centennial Scholarships.

To qualify for Early Action and Centennial Scholarship consideration, a *completed* application for admission with the candidate's signature, official high school transcript (including the list of senior courses), standardized test scores, application fee, and essay *must be received in the Office of Admission by December 17, 2007.* Decisions will be made on complete applications by the end of January, and offers of admission are nonbinding. Students offered admission under the Early Action plan may apply to

other colleges and are not required to make a commitment to URI prior to May 1.

If a Centennial Scholar's residency classification changes, the amount of the award may be reduced because of the change in the amount of tuition charged.

Transfer applicants are not eligible for Centennial Scholarships. For more information, visit [uri.edu/admission](http://uri.edu/admission).

**Admission Inquiry Online.** Candidates may check the status of their applications online. Instructions are forwarded to candidates when applications are received.

**Entrance Tests.** All candidates for freshman admission must take the SAT or ACT. Applicants who have been away from formal studies for three or more years should contact the Admission Office about entrance requirements or refer to the "Providence Campus" section on page 28 of this catalog.

Applicants are encouraged to take the SAT or ACT as early as possible in their senior year; taking the test after January reduces a candidate's prospects for a timely decision. Students are required to have their test scores submitted to the University by the testing service. Full information concerning these tests may be obtained from local high schools and is available online at [collegeboard.com](http://collegeboard.com).

Domestic students whose first language is not English are encouraged to submit their official Test of English as a Foreign Language (TOEFL) results or International English Language Testing System (IELTS) results to supplement their SAT scores. All international applicants whose first language is not English or for whom English has not been the language of instruction are required to submit one of these testing results. International student applicants must score minimum TOEFL results of 550 on the paper-based version, 213 on the computer version, or 79-80 on the Internet (iBT) version. Required minimum results for the IELTS are 6.5. For more information about the TOEFL, visit [ets.org](http://ets.org). For more information about the IELTS, visit [ielts.org](http://ielts.org).

**Early Enrollment/Admission.** Students who have completed their junior year of high school with *superior* records are eligible for early admission. A part-time study program may be arranged for students wishing to begin college study in their senior year while continuing their high school work. A full-time program may be arranged for those recommended for college admission without completion of the standard preparatory program.

Early admission students will normally have completed three years of English, three of mathematics, two of foreign language, two to three of social studies or history, and two of natural or physical science. Students must be academically competitive within their high school class, have corresponding scores on the SAT or ACT, and have the endorsement of their high school counselor or principal. Those interested should plan with their high school counselor early in their junior year, and direct further inquiries to Undergraduate Admission. An interview is required.

**Advanced Standing.** Advanced standing for freshmen is granted to students who have completed college-level courses in a high school participating in the Advanced Placement Program and who have passed (with a score of 3 or better on most examinations) the CEEB Advanced Placement Examination in the following subject areas: art history, art studio (drawing and general), biology, chemistry, computer science (AB), English (language and composition; literature and composition), French (language and literature), German (language), history (European and United States), Latin (Virgil and Catullus-Horace), mathematics (calculus AB and BC), music theory, physics B (mechanics) and C (electricity and magnetism), and Spanish (language and literature). For a list of University courses considered equivalent to advanced placement classes, please visit [uri.edu/admission](http://uri.edu/admission).

In addition, students can take proficiency examinations administered by University departments to be granted advanced standing. Entrance with advanced

standing can accelerate the completion of degree requirements or enrich the undergraduate program by allowing for additional elective or advanced courses.

#### **International Baccalaureate Degree**

**Program.** URI awards credit for most higher level examinations taken in high school and passed with a score of 5, 6, or 7. Course credit is awarded at the discretion of individual departments. No credit is awarded for standard level examinations.

**Transfer Students.** Transfer students are those who have completed 24 or more hours of transferable college coursework. A minimum cumulative GPA of 2.50 is required, but most successful applicants have much higher grade point averages. Certain programs may require a higher GPA or specific prerequisite courses. Candidates accepted with transfer credit are classified as freshmen, sophomores, juniors, or seniors according to the number of credits accepted for transfer. The transfer of general education credits is described on page 33. Students may apply to URI teacher education programs only after acceptance by an academic department. Some programs restrict enrollment of new transfer students to the fall semester only.

Transfer students must submit transcripts directly to URI from all colleges and universities attended, whether or not they expect or desire credit for such work. High school records must also be submitted. Transfer candidates must be in good standing and eligible to return to the institutions they attended previously. Credit is not awarded for course work taken prior to admission to URI and disclosed after acceptance. Credit will only be given for courses in which the student earned a final grade of C or better.

Credit transferred from other schools is limited by the following restrictions: 1) no more than half of the credits URI requires for graduation can be transferred from two-year institutions; 2) students must earn at URI at least one-half of the credits required for a major, at least one-half of the credits required for a minor, and at least one-fourth

of the credits required for graduation; 3) only grades earned for course work at URI are included in the calculation of a student's grade point average.

Transfer admission to the College of Pharmacy is highly competitive and limited to currently enrolled URI students who are preparing to begin the third year. At present, the University does not accept transfer applications to the College of Pharmacy for external candidates.

The College of Business Administration (CBA) requires transfer students to have 60 college credits, including Accounting I and II, Business Communications, Calculus, Economics I and II, Statistics I and II, and one computer course. Students not meeting these requirements may be admitted to University College and later transfer to CBA, provided they complete the above-named courses and meet the college's GPA requirement. The University grants direct transfer credit for equivalent upper-level business courses taken at institutions that are accredited by AACSB International (The Association to Advance Collegiate Schools of Business). Upper-level business courses taken at an institution not accredited by AACSB International must be validated by examination. Courses not validated will be awarded open elective credit.

**Joint Admission.** The Joint Admission Agreement (JAA) is available to Community College of Rhode Island (CCRI) students who, prior to earning 30 credits, matriculate into one of the recognized JAA transition plans. Each transition plan specifies at least 32 credits that transfer to URI in fulfillment of general education requirements. Although some additional general education courses may be required, the following core requirements ensure that transferring and continuing students have common knowledge across a broad spectrum of the liberal arts and sciences: Writing/Communications (3 credits), Literature (3), Fine Arts (3), Mathematics (3), Science (8), Social Science (9), additional general education (3). Since the requirements of specific degree programs vary, students should consult with their JAA advisor regarding course selection.

To aid students and their advisors in making appropriate selections, JAA transition plans are available on the RI Transfers Web site ([ribghe.org/ritransfers.htm](http://ribghe.org/ritransfers.htm)) and in the *Transfer Guide for Students* available at the same site. Only programs specified in these publications and sites as JAA programs with transition plans are included in this agreement.

**Performance-Based Admission.** This is available at URI's Providence Campus. See page 28 for more information.

**Proficiency Examinations.** Students showing evidence of advanced knowledge or who have taken "enriched" programs in high school may be exempt from certain courses and requirements if they take departmental proficiency exams. A student who successfully passes such an exam earns credits as well as exemption from the course. However, students who, by successfully passing proficiency examinations, have the general education requirements waived in writing, mathematics, and/or foreign languages or culture, must still complete the specified number of credits for their degree programs.

Students interested in taking these exams should contact their academic dean. New students may obtain further information during orientation from their University College advisor.

**College Level Examination Program (CLEP).** Students who have been away from formal studies for three or more years may take CLEP General Examinations to demonstrate academically measurable learning acquired in nontraditional ways. URI students must secure prior approval from their academic dean to take the exams for credit, and the exams must be taken during the first semester of enrollment. Transfer students may receive credit from CLEP General Examinations taken prior to enrollment at URI, provided that their scores meet URI standards and their academic dean judges that the CLEP credit does not duplicate other transfer credit. CLEP General

Examinations may be taken in the following areas: (URI credits are in parentheses.)

	Minimum score
English Composition (English Composition elective, 3 credits)	50
English Composition with essay (WRT 101 and Communication elective, 6 credits)	50
Humanities (Fine Arts and Literature elective, 6 credits)	50
Natural Science (Natural Science elective, 6 credits)	50
Social Science and History (Social Science elective, Letters elective, 6 credits)	50
Mathematics (Math 107 and math elective, 6 credits)	50

Academic departments may use CLEP Subject Examinations as proficiency exams to test students' mastery of the subjects taught by the department. A department that judges a CLEP Subject Examination to be a satisfactory proficiency exam decides what credit should be awarded within the department to students passing the exam, establishes the minimum score for credit, decides whether students must answer the optional essay questions supplied by CLEP, and decides whether students must pass a supplementary department test, such as a lab exam. The following CLEP Subject Exams are accepted by departments as proficiency examinations:

*The minimum score required to earn URI credit is 50 for each exam.*

	URI credits
Accounting Principles (BUS 201, 202)	6
Algebra/College	N/A
Algebra/Trigonometry (MTH 111)	3
American Government (PSC 113)	3
American Literature (ENG 241, 242)	6
Analyzing and Interpreting Literature (ENG 110 and 3 credit elective)	6

Biology General (BIO 101, 102)	8	in-state fee. Graduate students and continuing undergraduate students will be charged at the rate of 1.5% of the in-state fee. If at any time a student transfers out of the New England Regional Student Program, out-of-state fees will apply.
Business Law Introductory (BUS 333)	3	
Calculus Elementary Functions (MTH 141 and 2 credit elective or MTH 131 and 3 credit elective or BAC 120 and 3 credit elective)	6	
Chemistry General (CHM 101, 102/112, 114)	8	Details are available from the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111 ( <a href="http://nebhe.org">nebhe.org</a> ), or high school guidance offices. All new students apply for regional student status as part of the application process. The Office of Registration and Records provides information pertaining to this program for students already enrolled at URI.
Economics Macro Principles (ECN 202)	3	
Economics Micro Principles (ECN 201)	3	
Ed. Psychology Intro. (EDC 312)	3	
English Literature (ENG 251, 252)	6	
French Language (Level I & Level II)	N/A	
German Language (Level I & Level II)	N/A	Continuing or returning students claim eligibility by submitting a formal request to Registration and Records prior to the end of the add period of the semester in which regional status is to be effective.
History, US I (HIS 141)	3	
History, US II (HIS 142)	3	
Human Growth and Development (HDF 200 or PSY 232)	3	
Info. Systems & Computer App. (CSC 101 or BUS 110)	3	
Management Principles (BUS 340)	3	
Marketing Principles (BUS 365)	3	
Psychology Intro. (PSY 113)	3	
Sociology (SOC 100)	3	
Spanish Language (Level I & Level II)	N/A	
Trigonometry	N/A	
Western Civilization I (HIS 112)	3	
Western Civilization II (HIS 114)	3	
Western Civilizations I & II	N/A	

**New England Regional Student Program.** Through a cooperative plan sponsored by the New England Board of Higher Education, students from other New England states may enroll in a small number of selected programs at URI which are not offered in their own states. Certain programs at other New England state universities are open to Rhode Islanders on a reciprocal basis. Commencing with the fall 2006 semester, freshmen and transfer students in approved regional programs will be charged tuition at the rate of 1.75% of the

**Health Questionnaire.** Every newly entering student is provided a health questionnaire from Health Services, which must be completed and returned promptly. It provides Health Services with basic health information prior to the student's arrival on campus. Questionnaires are distributed after admission to URI and play no part in the acceptance process.

Each entering student must also provide a certificate signed by a licensed health care provider giving the dates of immunizations to protect against rubella (German measles), rubeola (measles), and mumps, hepatitis B, and varicella (chicken pox), in addition to a tetanus-diphtheria (Td) booster within ten years (per Section 23-1-18(9) of the general laws of Rhode Island). This certificate is included with the questionnaire mailed to students. Students failing to comply with this requirement will face sanctions and will be unable to register for classes.

**Talent Development.** URI encourages the application of minority and disadvantaged individuals from Rhode Island. In 1968, the Talent Development (TD) program was established here to recruit and retain minority and disadvantaged applicants. TD provides an opportunity for URI admission, an academic pre-matriculation program in residence at Kingston, and consistent academic support throughout a student's undergraduate program. Financial aid is available for students accepted to Talent Development; need is determined by the filing of a Free Application for Federal Student Aid (FAFSA) form. For more information on this program, please see page 16 or visit [uri.edu/talent\\_development](http://uri.edu/talent_development).

Interested students should apply to Talent Development during their senior year in high school. Those possessing an equivalency diploma or who have been out of high school for some time are also encouraged to apply. Applications and all credentials should be sent to URI Undergraduate Admission, 14 Upper College Road, Kingston, RI 02881-1322, from October 1 through February 1.

# UNDERGRADUATE PROGRAM REQUIREMENTS

This section deals with academic requirements, regulations, and opportunities for undergraduates that are University-wide rather than college-related.

Consistent with its policy of allowing the greatest latitude possible in course selection, the University offers a wide choice to fill its general education requirements and encourages students to select free electives that cross departmental and college lines.

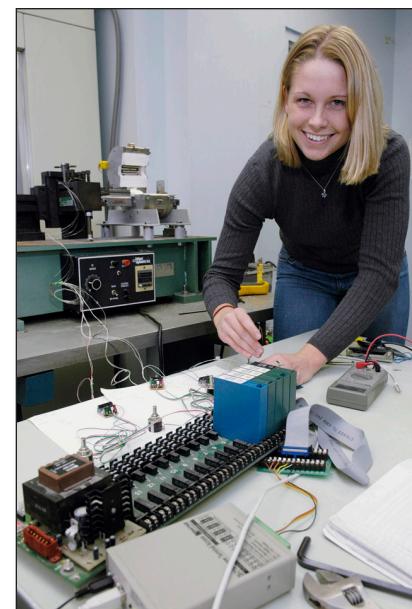
**NOTE:** The University administration may alter, abridge, or eliminate courses and programs of study. While every effort is made to keep this catalog current, not all courses and programs of study listed may be available at the time of student matriculation. Similarly, course and program requirements may be changed from time to time. In all cases, every effort will be made to accommodate individual students whose exceptional circumstances may make it difficult or impossible to meet the changed requirements. Changes in the academic calendar may also be made when deemed in the best interests of the University.

## General Education Requirements

The University believes that all undergraduate students, regardless of their degree programs, need experience in the study of fundamentals that builds on the student's previous education and continues through the undergraduate years and beyond. All bachelor's degree students follow the same University-wide general education requirements. While general education requirements for all students are selected from the same list of approved courses, there are possible variations based on the student's major. Students should consult specific college and departmental requirements and discuss the requirements with an advisor. In their first semester, all entering freshmen and new transfer students with fewer than 24 credits are required to take *URI 101 Traditions and Transformations: A Freshman Seminar*, including community

service provided by the Feinstein Enriching America Program (see "Course Descriptions," beginning on page 159).

The purpose of general education at the University of Rhode Island is to lay a foundation for the lifelong enrichment of the human experience and for a thoughtful and active engagement with the world. This foundation is built on recognition of the complexity of nature, society, and the individual. The objective of general education is to introduce students to the fundamental dimensions of this complexity and to develop an appreciation of different ways of understanding it and different cultural responses to it.



Corresponding with its goals, the general education program is divided into the following core areas:

**English Communication.** *Six credits* in English communication, at least three of which must be in a course designed specifically to improve written communication skills.

**Fine Arts and Literature.** *Six credits* in courses on artistic and literary expression and interpretation.

**Foreign Language/Cross-cultural Competence.** *Six credits* or the equivalent in course work related to communicating across cultures.

**Letters.** *Six credits* in courses that address the wisdom and traditions of the past and present in a global setting.

**Mathematical and Quantitative Reasoning.** *Three credits* in a course on mathematical or quantitative skills and their application.

**Natural Sciences.** *Six credits* in courses on the interrelationships of the natural world.

### General Education Learning Outcome Objectives

In academic and non-academic settings, with respect to fine arts and literature, humanities and Letters, the natural sciences, and the social sciences, students will be able to ...

- **identify** basic concepts, theories, and developments;
- **recognize** issues, as well as aesthetic and literary elements and forms;
- **ask** questions appropriate to the modes of inquiry;
- **collect** information relevant to the questions raised; and
- **analyze** the information in order to address the questions or solve problems.

For a comprehensive set of statements regarding the expected outcomes of each college and major, visit [uri.edu/catalog/assessment](http://uri.edu/catalog/assessment).

**Social Sciences.** Six credits in courses related to the study of human behavior in social, economic, cultural, and political contexts.

Because particular skills are essential to a thoughtful engagement with the world, each general education course incorporates opportunities to practice three (3) or more of the following skills: reading complex texts, writing effectively, speaking effectively, examining human differences, using quantitative data, using qualitative data, using information technology, and engaging artistic activity.

In addition, the University has a commitment to providing students with the opportunity to examine diversity within and across national boundaries and requires that at least two of the courses taken as part of a student's general education program must be designated as diversity [D] courses. Only one course in a foreign language may be applied to the diversity requirement. Since these diversity courses may be selected from any of the general education core areas, this requirement does not increase the total number of credits in the general education program.

*Specific courses that may be used to meet these requirements are listed below. If a course is countable in more than one core area, a student may count the course in only one core area. For an explanation of course codes, see pages 159–160:*

**English Communication: Writing (ECw):** BGS 100\*, ELS 112, 122; WRT 104, 105, 106, 201, 227, 235, 302, 303, 304 [D], 305 [D], 333; **General (EC):** COM 100 [D], LIB 120, PHL 101.

**Fine Arts and Literature (A):** AAF 247 [D], 248 [D]; ART 101, 207; ARH 120 [D], 251 [D], 252 [D]; CLA 391 [D], 395 [D], 396 [D], 397 [D]; CLS 160 [D]; ENG 110 [D], 160 [D], 241 [D], 242 [D], 243 [D], 247 [D], 248 [D], 251 [D], 252 [D], 260 [D], 262 [D], 263 [D], 264 [D], 265 [D], 280 [D], 300 [D], 302 [D], 303 [D], 304 [D], 317 [D], 355 [D], 357 [D], 358 [D]; FLM 101 [D], 203 [D], 204 [D], 205 [D]; FRN 309 [D], 310 [D], 320 [D]; HPR 105; LAR 201;

MUS 101 [D], 106 [D], 111, 292 [D], 293 [D]; PLS 233, 335 [D]\*; RUS 391 [D], 392 [D]; SPA 305 [D], 306 [D], 307 [D], 308 [D], 320 [D]; THE 100, 181, 351 [D], 352 [D], 381, 382, 383; WMS 317 [D]. *Please note: the College of Arts and Sciences requires one course in fine arts and one course in literature. See page 50.*

**Foreign Language/Cross-cultural Competence (FC):** This requirement shall be fulfilled in one of the following ways: 1) demonstration of competence through the intermediate level by a proficiency examination or by successfully completing the 104 level in a living language or the 302 level in a classical language (students who fulfill this requirement through an examination cannot earn course credit for graduation; students who earn less than six credits in fulfilling the requirement should apply credits to the elective or major areas); 2) a two-course sequence in a language previously studied for two or more years in high school through at least the 103 level in a living language or 301 in a classical language appropriate to a student's level of competence (e.g., 102 and 103, 102 and 301; 131 and 103; 103 and 104; 301 and 302); 3) course work in a language not previously studied (or studied for less than two years in high school) through the beginning level. All modern and classical language courses used to fulfill these options carry the [D] designation; 4) study abroad in an approved academic program for one semester; 5) majoring in a foreign language; 6) two courses in cross-cultural competence selected from the following list: CPL 300 [D]; FRN 309 [D], 310 [D], 320 [D]; HIS 132 [D], 171 [D], 172 [D], 180 [D], 311 [D], 327 [D], 374 [D], 375 [D]; LET 151L [D], 151Q [D], 151R [D]; NRS 300 [D]; PHL 331 [D]; RLS 131 [D]; SPA 320 [D]; TMD 224 [D]. Six credits of a full-semester approved Intercultural Internship in a foreign country through the Office of Internships and Experiential Education may be substituted for cross-cultural competence courses. Formally registered international students, students with a recognized immigrant status, and students who are naturalized citizens may be exempt from the foreign

language or cross-cultural competence requirement at the discretion of the dean of the student's academic college.

**Letters (L):** AAF 150 [D], 201 [D], 355 [D], 356 [D]; APG 327; BGS 392 [D]; CLS 160 [D], 235; EGR 316 [D]; ENG 110 [D], 160 [D], 243 [D], 251 [D], 252 [D], 280 [D], 355 [D], 356 [D]; HIS 111, 112, 113 [D], 114 [D], 116, 117, 118 [D], 130 [D], 132 [D], 141 [D], 142 [D], 145 [D], 146 [D], 150 [D], 160 [D], 171 [D], 172 [D], 180 [D], 304, 305, 310 [D], 311 [D], 314, 323 [D], 327 [D], 332 [D], 333 [D], 340 [D], 341 [D], 346 [D], 351 [D], 355 [D], 356 [D], 374 [D], 375 [D]; JOR 110 [D]; LAR 202 [D]; LET 151L [D], 151Q [D], 151R [D]; NUR 360 [D]; PHL 101, 103, 204, 210 [D], 212 [D], 215, 217 [D], 235, 314, 316 [D], 321, 322, 323 [D], 325 [D], 328 [D], 331 [D], 346, 355; PSC 341, 342; PSY 310; RLS 111 [D], 125, 126, 131 [D]; WMS 220 [D], 315 [D]; 320 [D].

**Mathematical and Quantitative Reasoning (MQ):** BUS 111 (BAC 120); CSC 101\*, 201; HPR 108; MTH 107, 108, 109, 111, 131, 141; PSC 109; STA 220.

**Natural Sciences (N):** AFS 190, 210, 211; APG 201 [D]; AST 108; AVS 101 [D]; BGS 391\*; BCH 190; BIO 101, 102, 105, 106, 286 [D]; CHM 100, 101, 103, 112; GEO 100, 102, 103, 110, 120; HPR 109; MIC 190; NRS 190; NFS 207; OCG 110, 123, 131; PHY 109, 111, 112, 140, 185, 186, 203, 204, 205, 273, 274, 275; PLS 150, 190, 233; TMD 113.

**Social Sciences (S):** APG 200 [D], 202, 203 [D], 301 [D]; BGS 390 [D]\*; CPL 202 [D]; ECN 100 [D], 201, 202, 306, 381 [D]; EDC 102 [D]; GEG 101 [D], 104 [D]; 202 [D]; HDF 225; HPR 110 [D]; HSS 130 [D]; JOR 110 [D]; KIN 123 [D]; LIN 200 [D]; MAF 100; NUR 150 [D]; PSC 113 [D], 116 [D], 201 [D], 274 [D], 288; PSY 103 [D], 113 [D], 232 [D], 235 [D], 254 [D], 255 [D]; REN 105, 310, 356; SOC 100 [D], 212 [D], 230 [D], 240 [D], 242 [D], 274 [D]; TMD 224 [D]; WMS 150 [D], 320 [D].

\* Courses not approved to meet general education requirements for Arts and Sciences students.

All students must meet the curricular requirements of the colleges in which they plan to earn their degrees. Some colleges require that students select specific courses from the lists given for the various general education components. Therefore, students must refer to the requirements specified for their programs (see "Undergraduate Programs").

In the colleges of Arts and Sciences, the Environment and Life Sciences, and Human Science and Services and for the Bachelor of General Studies, credits within a student's own major may not be counted toward general education requirements in fine arts and literature, Letters, natural sciences, or social sciences. In other colleges, credits within a student's professional college may not be counted toward any general education requirements. However, courses that serve as prerequisites for a major can be used to fulfill the general education requirements.

Students in the Honors Program can receive general education credit for honors sections of courses that have been approved for general education credit.

Transfer students can receive general education credit for courses taken at other institutions as long as such credits are in courses equivalent to courses given general education credit at URI.

## Other Academic Requirements

Certain basic courses are required in many curriculums for transfer from University College into a degree-granting college in the junior year. These are listed in the curriculums of the individual colleges.

The responsibility for meeting all course and credit requirements for the degree rests with each individual student.

Students who desire to accelerate their programs and receive credit for courses taken at other institutions, during summer session, or in the Alan Shawn Feinstein College of Continuing Education must have prior approval from their academic deans.

## Capstone Experiences

A capstone experience integrates course work throughout the undergraduate major program. Capstone experiences include courses, internships, portfolios, senior theses, research/design projects, etc. They are scheduled for the senior year. Capstone experiences may be either required or simply recommended. See your program of study for more information.

## Minor Fields of Study

Undergraduate students may declare a "minor" field of study. Requirements for a minor may be satisfied by completing 18 or more credits in: 1) any one of the University-approved minors; 2) a curriculum other than the student's major; or 3) related studies from more than one department under the sponsorship of a qualified faculty member. Descriptions of approved interdepartmental minors follow. Descriptions of requirements for approved departmental minors may be found in the departmental sections.

To declare a minor, a student must have the approval of the department chairperson of the minor field of study and the dean. Faculty sponsorship is required for the third option listed above. (Non-business students wishing to obtain a departmental minor in the College of Business Administration should expect to take the six courses over a period of two years. Admission is on a space-available basis only, and therefore not guaranteed.)

A minimum grade point average of 2.00 must be earned in the minor courses, and at least 12 of the 18 credits must be at the 200 level or above. At least half of the credits required for the minor must be earned at the University of Rhode Island. General education requirements may be used for the minor, but no course may be used for both the major and minor field of study. Minor courses may not be taken on a pass-fail basis.

Application for the minor must be filed in the academic dean's office no later than the beginning of the student's final semester or term.

## Interdepartmental Minors

*African and African-American Studies.* Students who declare African and African-American studies as a minor are required to take two core courses: AAF 201 and 202 (six credits). In addition, students select four electives (12 credits) from the following: AAF 360, 390, 410; APG 313; COM 333; ECN 386; ENG 247, 248, 362, 363, 364, 474; HIS 150, 384, 388; and PSC 408. Students who want to use other courses that have as their central focus some aspect of the black experience may do so with permission from the program director.

For a description of the degree program for the major in African and African-American studies, see page 52.

*Asian Studies.* Students who declare a minor in Asian studies are required to complete 18 credits including at least two courses (6 credits) from the following: HIS 171, 172, 374, 375; PHL 331; PSC 377; RLS 131; THE 382. The remaining 12 credits may be selected from the preceding group or from the following: BUS 317/COM 354; CHN 101, 102, 103, 104; COM 361, 461, 491, 492; HIS 391, 481, 495; JPN 101, 102, 103, 104; LAN 191, 192, 193, 194, 205, 206; PSC 303, 455, 456. At least 12 of the 18 credits must be taken at the 200 level or above. Students interested in the minor should contact Professor Timothy George in the History Department. A member of the Asian Studies Advisory Committee will then be assigned as the advisor for the minor and will assist the student to fulfill its requirements.

*Biological Sciences.* Students who declare biology as a minor must take BIO 101, BIO 102, and MIC 211 or MIC 201. The remaining courses may be selected from BCH 311 and any BIO or MIC course. At least 18–20 credits are required, and at least 12 of the 20 credits must be taken at the 200 level or above.

For a description of the degree program for the major in biological sciences, see page 94.

*Community Planning.* The Department of Community Planning and Landscape Architecture offers a minor in community planning. Students who declare this minor must complete 18 credits including CPL 210, 410, and 498 (for 9 credits). In addition, students select three elective courses for 9 additional credits from the following: AAF/PSC 410, 466; CPL 391, 392, 397; CPL/MAF 434; CVE 446; ECN 402, 404; GEG 103; HDF 418, 424, 434, 440; MAF 484; PHL 318; PSC 221, 402; and SOC 214, 240. These elective courses cannot be simultaneously counted toward a major. Students interested in this minor should contact Professor Farhad Atash in Rodman Hall, 401-874-2982.

*Comparative Literature Studies.* Students who declare comparative literature studies as a minor must earn 18 credits distributed as follows: six credits in comparative literature studies at the 200 level or above; 12 credits from literature courses in comparative literature, English, or languages, of which six credits must be in one national literature either in the original language or in translation. Students majoring in English or languages may not count courses in their major toward this minor.

For a description of the degree program for the major in comparative literature studies, see page 55.

*Film Media.* See page 58.

*Forensic Science.* Students who declare a minor in forensic science must complete 18 credits including two credits of CHM 391, three credits of CHM 392 (Introduction to Criminalistics), and three credits of research or a practicum related to forensic science. The practicum can be in the form of participating in a Forensic Science Partnership research project or internship on or off campus. The remaining 13 credits may be selected from the following: APG 300\*, 317, 350\*; APG/PSY 405\*; BCH/BIO/ASP/PLS 352\*; BCH/MIC 403; BCH/BIO 437\*, 451\*; BCH 481\*, 482\*, 484\*; BIO 242\*, 244\*, BIO 381/ENT 385\*, BIO 382/ENT 386\*, BMS 225\*, 313, 322, 325, 326, 416, 525, 530\*, 535\*, 544, 546; CHE 332\*, 333, 438\*, 491,

539\*, 576; CHM 226\*, 228\*, 412\*, 414\*, 425\*; COM 215; DHY/CMD/PHT 440\*; ENT 411 or 511\*; GEO 103, 320\*, 321\*, 554\*; PHP 316, 318, 324; PLS/ASP 355\*; PLS 361\*; PSC 472\*; PSY 254\*, 335\*, 460, 466, 479; SOC 216, 230, 370, 420\*; SOC/PSC 274\*; TMD 303\*, 313\* (asterisked courses have prerequisites not included in this program; students are responsible for completing these prior to enrolling in the course). Courses required for a student's major cannot also be used to satisfy the minor requirements. It is suggested that no more than two courses in the minor be from any one department and that all students take at least one chemistry course in addition to CHM 391. Students interested in this minor should contact Professor Jimmie Oxley, Department of Chemistry.

*Geography.* The minor in geography is designed to enhance student spatial skills. Global awareness is a fundamental component of many programs of study here at URI. It is a critical element in developing spatial literacy. The required courses for the minor include GEG 101 (3 credits) and three of the following (9 credits): GEG 104, 200, 203, and 511.

Six credits of electives are chosen from the following list in consultation with the geography advisor, Professor William Gordon: AAF/PSC 410, 466; APG 203; CPL 210, 410; GEG 202, 350; GEO 103, 210; HIS (a state, regional, or national history course); OCG 123; PSC 116, 377, 403, 407, and 408. These courses cannot be double-counted for a student's academic minor and major.

The Department of Landscape Architecture, within the College of the Environment and Life Sciences, administers this program. Interested students should contact Professor William Gordon in the East Tower Office of Rodman Hall (third floor), 401-874-5108 or [wgordon@uri.edu](mailto:wgordon@uri.edu).

*Gerontology.* The program in gerontology is a University-wide program that promotes study, teaching, and research in aging. It also maintains relationships with state and local agencies serving Rhode Island's older population. This affords opportunities for

research, internships, and field experiences to students interested in the problems of aging.

The Bachelor of Science program in human development and family studies is the recommended major for gerontology. There is also the opportunity for students taking their major studies in a number of areas to do a less specialized study in aging by declaring a minor in gerontology. This must be done no later than the first semester of the senior year. It requires 18 or more credits in aging-related studies approved by the program in gerontology and the college in which the student is registered.

HDF 314 (Introduction to Gerontology) is required for either specialization. Undergraduate gerontology courses include NFS 395; HDF 315, 431, 440; and SOC 438. Also relevant are HDF 421, 450, 480; NUR 349, 360; BIO 242; and the Office of Internships and Experiential Education.

It is important to take courses that fulfill degree requirements from the beginning. Students who wish to specialize in aging are advised to contact the program in gerontology early in their University studies.

*Hunger Studies.* This minor intends to prepare students for leadership roles in understanding and eradicating hunger. Requirements include 18 credits (at least 12 at the 200-level or above), nine of which will be core courses, including the introductory course HSS 130; up to three 1-3-credit internships; and a 3-credit capstone course which will include one credit for portfolio development. No course may be used for both the major and minor. Courses in general education may be used for the minor.

All courses must be taken for a grade, except for the internship and portfolio credits, and a grade of 2.00 or better must be earned in each graded course. To declare this minor, a student must have the approval of a program advisor and an academic advisor. For more information, contact Professor Kathleen Gorman, Director, Feinstein Center for a Hunger Free America, Ranger Hall, 309, or Professor Lynn McKinney, Human Science and Services, Quinn Hall, Kingston.

Core courses: 9 credits; HSS 130 (3 credits), Internship (total of 3 credits), HDF 434 (3-credit capstone, 1 credit for portfolio development). Optional: URI 101 with a focus on hunger/social justice (1 credit).

Electives: 9 credits; may be focused on a particular theme. Approved electives include CPL 210; CPL/NRS 300; NFS 276, 394, 395; HDF 357, 489G; HSS 120; PHL 217; PLS 305; PSC 221, 485.

*International Development.* The international development minor is available to undergraduates interested in employment overseas or in domestic enterprises with international operations.

Students choosing this minor must complete 18 credits, with a maximum of six credits at the 100 or 200 level. Students must complete the following: 1) CPL/NRS 300 (three credits); 2) language or culture (six to nine credits), to be met by the completion of at least six language credits through the intermediate level (103 or 104) or placement in the conversation and composition level (205 or 206) and completion of at least six credits in the same language or culture cluster (placement for course work is determined by the Educational Testing Service exam as administered by the University's Department of Modern and Classical Languages and Literatures in the following languages: French, Spanish, German, and Russian; the University also offers Portuguese and selected other languages that, with permission, could satisfy the requirement; six credits are allowed in the general education requirements for language and culture); 3) an approved internship (three to six credits) providing international development experience during the junior or senior year (CPL/NRS 487); and three credits of an advanced-level seminar (CPL 495 or NRS 496). See "Courses of Instruction" later in this catalog for descriptions of CPL/NRS 300, CPL 487 and 495, and NRS 496.

The College of the Environment and Life Sciences administers this program; interested students should contact Professor David Abedon in Natural Resources Sciences, Coastal Institute, Kingston, Room 113, 401-874-4655.

*International Relations.* The Department of Political Science has established a minor in international relations, designed to provide a basic grounding in the theory and practice of international affairs for students with an interest in global issues. Drawing upon upper-level courses in economics, history, and political science, the program integrates existing course offerings and provides a focused option in international affairs.

Students must complete a minimum of 18 credits, drawn from the required courses and options outlined below. Please note that students are responsible for completing any necessary prerequisites before enrolling in these courses.

Requirements include ECN 338 and one of the following **capstone** courses: PSC 431 or 580.

In addition to the required courses, students must take **at least one** course from each of the following groups, for a total of 18 credits: international relations theory (PSC 350, 481, 487, 544, 546, 580, and 584); international political economy (ECN 305, 344, 363, 381; PSC 402, 403, 521, and 595); comparative government (HIS 332, 374, 375, 381, 382, 384, 388; PSC 201, 301, 321, 377, 401, 406, 407, 408, 410, and 434).

The Department of Political Science administers this program; interested students should contact Professor Nicolai Petro or Professor Richard McIntyre.

*Justice, Law, and Society.* Students declaring a minor in justice, law, and society must complete a minimum of 18 credits from among the courses listed below. At least three credits must be completed in each of the three groups. Several of the courses have prerequisites not included in this program; students are responsible for completing these prerequisites prior to enrolling in the course. Other courses, such as topics courses, may be approved for credit by the program coordinator. Interested students should contact Professor Leo Carroll in the Department of Sociology and Anthropology. *Criminal Justice:* HDF/SOC 437; PSC/SOC 274; PSY 254, 261, 335, 460, 465, 466; SOC 230, 330, 370, 331,

420; SOC/PSC 426 and 476. *Law:* ECN 337, 415; ENG 356; PHL 430; PSC 288, 369, 471, 472. *Social Justice:* AAF 201; APG 311, 322; ECN 305, 381, 386; HIS/AAF 150; HIS 328, 344, 346, 349, 352, 366, 367; PHL 210, 217, 314, 318; PSC 441, 485; PSY 480; SOC 240, 242, 413, 428, 438; WMS 150, 310.

*Labor Studies.* The labor studies minor is available to students interested in employment issues and the problems faced by working people in the United States and abroad. Students declaring this minor are required to complete 18 credits including LRS 480, Seminar in Labor Studies. The remaining 15 credits can be selected from HIS 349; BUS 344, 444; SOC 241, 336, 320, 350, and 432; PSC 369, 471, 472, and 498; ECN 338, 368, 381, and 386; and COM 460 or other courses approved in consultation with SLRC faculty. The labor studies minor is administered by the Schmidt Labor Research Center. Information can be obtained from Professor Richard Scholl in the center, Hart House, 36 Upper College Road, 401-874-2239.

*Leadership Studies.* The minor in leadership studies is based on a broad cross-disciplinary philosophy of leadership. The goal is to prepare students for leadership roles and responsibilities. The minor will provide students with opportunities to develop and enhance a personal philosophy of leadership that includes understanding of self, others, and community as well as the acceptance of responsibility inherent in community membership. The curriculum is focused on expanding students' knowledge, skills, and understanding of specific leadership theories, concepts, and models in applied settings.

The minor includes the following three areas: education that consists of exposure to leadership theories, concepts, and models; leadership training that is directed at skill areas in leadership; and developmental aspects that require academic and co-academic experiences and reflection intended to empower students to mature and develop greater levels of leadership complexity, integration, and proficiency.

To declare a minor in leadership studies, a student must first visit the Center for Student Leadership Development (CSLD) in the Memorial Union to begin the enrollment process, and then inform his or her major academic advisor. A program advisor will facilitate the student's process through the minor, and help assure that class, internship, and portfolio requirements are completed.

Leadership minors must complete 18 or more credits related to leadership offered by more than one department. Requirements include a core of nine credits as follows: 1) a choice of an introductory course (HDF 190 or HDF 290); 2) a choice of a capstone course (BUS 441/COM 402 or HDF 498); 3) a two-credit internship with specific requirements including conceptual understanding, skill development through experience and feedback, and personal awareness, assessment, and growth; each internship requires 80 hours of fieldwork; the specific internship course will depend on the student's particular major or depend on the specific supervisor and/or advisor for the internship site; 4) a one-credit portfolio course, which will be directed by the instructor(s) of the capstone course. The portfolios are multidimensional collections of work that reflect the students' experiences in and out of the classroom as they relate to leadership knowledge, training, and experiences. The goals of the portfolios will be discussed when a student decides to choose the leadership studies minor and will be assessed as part of the capstone experience. The student's program advisor will work with the student on the development of the portfolio as an on-going project. All entries should be directly related to the student's goals regarding individually desired knowledge, skill development, and experiences. Reflection is an important part of the portfolio as well. Therefore students will consider the strengths and weaknesses of their particular accumulation of skills and knowledge in each area and their assessment of how to improve their overall learning.

Students will also choose nine elective credits from the following approved courses. Other courses may be appropriate and

may be added to this list with the approval of the Leadership Advisory Committee: AAF 300L; BUS 340, 341, 342, 343, 346, 442, 443; COM 100, 202, 210, 220, 221, 302, 322, 361, 383, 411, 415, 421, 422, 450, 451, 461; CSV 302; HDF 290, 498; KIN 375; PSC 304, 369, 504; PHL 212; ROTC; SOC 300P/WMS 350U; THE 221, 341; WMS 150, 310, 350, 350Y.

For more information on this minor, contact the Center for Student Leadership Development, Memorial Union, room 210, 401-874-5282.

*New England Studies.* Students who declare New England studies as a minor must take either NES 200 or 300 and elect at least one course from each of the following four categories. *Aesthetic Dimensions:* ENG 347. *Cultural Patterns:* APG 317; ENG 337; PSC 221. *Historical Dimensions:* HIS 335, 346, 362. *Physical Dimensions:* BIO 323, BIO 418; GEO 101; NRS 301, 302. Permission can be obtained from the Committee for New England Studies to use any rotating topics course, seminar, etc., whose focus is on some aspect of New England as a substitute for any of the above courses. The minor in New England Studies is coordinated by the English Department. Interested students should contact Professor Ron Onorato at 401-874-2769 or ronorato@uri.edu.

*Nonviolence and Peace Studies.* Students who declare a minor in nonviolence and peace studies should complete a minimum of 18 credits, as follows: 1) NVP 200, a one-credit colloquium course on Nonviolence and Peace Studies; 2) a nonviolence training experience such as one of the two-day workshops offered by URI's Center for Nonviolence and Peace Studies (or training offered by the American Friends Service Committee, Fellowship of Reconciliation, or similar organization), combined with three credits of directed reading/independent study focused on the history, theory, and application of nonviolence. Credits may be earned in HDF 498, HIS 391, HPR 401 or 402, PHL 499, PSC 455 or 456, PSY 489, SOC 498 or 499, and should be chosen in consultation with the student's advisor for the minor and other faculty; 3) a minimum

of one of the following three-credit courses in individual/interpersonal peace processes: COM 221, 422; HDF 450; HPR 107, 110; PSY 479Y, 479H; or SOC 408; 4) a minimum of one of the following three-credit courses in societal/global peace processes: AAF/PSC 380; COM 310, 361; ECN 386; HPR 411; PHL 217; SOC 318; or PSC 420; and 5) additional related courses totaling a minimum of 18 credits for the minor, such as AAF/SOC 240, 336; AAF/HIS 359, 366; AAF/SOC 428; COM 310, 322, 421, 461; ECN 381; HDF 230; HIS 328, 349; PSC 485; PSY 103, 334, 335; PSY/SOC 430; SOC 216, 230, 274, 330, 331, 370, 413, 420, 452; WMS 150, 310, 350, and 351. Students are responsible for meeting applicable prerequisites for courses in the minor, or for obtaining the instructor's permission to take a course.

Interested students should contact Professor Charles Collyer in the Department of Psychology (401-874-4227 or collyer@uri.edu).

*Oceanography.* The minor in oceanography is available to students interested in scientific understanding of the ocean, including its role in controlling the environment in which we live, its usefulness as a resource, and the importance of marine area protection and sustainability.

Students choosing this minor must complete 18 credits, at least 9 of which must be from OCG courses. Courses may not be taken on a pass-fail basis (except for OCG 493/494). The following course requirements must be met: 1) One OCG course and up to one other course from the following 100-level course list: CHM 100; GEO 103; MAF 100, 120; OCG 110, 123, 131. 2) One of these three general oceanography courses: OCG 123, 401, 451. 3) The remaining 7-12 credits from the following courses: APG 413; BIO 345, 360, 418, 455, 457, 469, 475, 495; EVS 366; GEO 277, 450, 465; MAF 330, 415, 461, 465, 471, 482, 484, 490, 511; MCE 354; OCE 215/216, 301, 307, 310, 311, 471; OCG 420, 480, 493/494, 501, 506, 517, 521, 540, 561. Permission of the program administrator is needed if OCG 493 or 494 is used to satisfy requirement 3 (above).

Other courses may be substituted, at the request of the student and with permission of the program administrator. The Graduate School of Oceanography (GSO) administers this program. Interested students should contact GSO Associate Dean David Smith at 401-874-6172 or [assoc\\_dean@gso.uri.edu](mailto:assoc_dean@gso.uri.edu).

**Public Relations.** Students can minor in public relations by completing one statistics course and 18 course credits from communication studies, journalism, and marketing, as specified. Applicable statistics courses are STA 220, 308, 409 and BUS 210. Communication studies majors take JOR 220, 345, JOR/PRS 340, BUS 365, and two additional marketing courses. Journalism majors take COM 210, 302, 320, BUS 365, and two additional marketing courses. Marketing majors take JOR 220, 345 and COM 210, 302, 320. Other majors take two applicable courses in communication studies, journalism, and marketing. The minor in public relations is coordinated by the Department of Communication Studies. Interested students should contact Professor Silvia (401-874-2552).

**Special Populations.** This interdepartmental minor gives students the opportunity to explore theory and gain practical experience through working with people who have special needs. This includes people who have disabilities (physical, emotional, mental, or educational) or are different socioeconomically, behaviorally, or culturally. A minimum of 18 credits may be earned by taking the required courses (HDF 200 or PSY 232; PSY 442), a minimum of three credits in supervised field experience, and a minimum of nine credits of selected electives.

Courses are chosen in consultation with an advisor from one of the participating departments: Communication Studies; Education; Nutrition and Food Sciences; Human Development and Family Studies; Nursing; Kinesiology; Psychology; Sociology and Anthropology; Textiles, Fashion Merchandising, and Design; or Theatre. The College of Human Science and Services administers the program.

**Thanatology (Death, Dying, and Bereavement).** The interdisciplinary minor in thanatology provides a basic understanding of loss, death, and grief.

Core courses are from thanatology; communications or counseling; and ethics, philosophy, or religion. While 12 of the 18 credits must be from the core areas, efforts have been made to keep the requirements as flexible as possible.

Students are required to take two courses in thanatology (6 credits); one course in communications or counseling (3 credits); and one course in ethics, philosophy, or religion (3 credits). The remaining courses (6 credits) may be selected from these and other related areas. Courses may be selected from the following list. Other courses may be approved by Professor Jean Miller in the College of Nursing. Contact her for additional information. *Thanatology*: HDF 421, 471; HPR 119, 319; NUR 360, 523, 524, 525, 526, 527, 529; PHP 460; PSC 440; PSY 479, 554Q. *Communications or Counseling*: COM 100, 221, 251, 324, 325, 361, 422; HDF 450. *Ethics, Philosophy, or Religion*: PHL 103, 212, 314, 328, 346, 401; RLS 111, 125, 126, 131, 151. *Other Related Courses*: Independent study when related to death and/or grief; i.e., HDF 314, 430, 498, 535; NUR 390; SOC 224, 238 (check with faculty advisor).

**Underwater Archaeology.** To obtain a minor in underwater archaeology, students must take 18 credits in history, historical archaeology, anthropology, classical archaeology, oceanography, and marine policy, at least 12 of which must be at the 200 level or above. The required courses and options are outlined below.

Students must take HIS/APG 490, and either APG 417 or ARH 475 (six credits). Students are encouraged to take these required 400-level courses toward the end of their program of studies. In addition, students must take one course from each of the following four groups: classical archaeology/material culture (ARH 251, 354, 475; ARH/APG 465); anthropology (APG 202, 203, 302, 303, 319, 417; APG/MAF 413); history (HIS 130, 389, 390, 396); oceanog-

raphy/marine policy (OCE 110, 123, 401, 451; MAF 100, 220).

Interested students should contact Professor Rod Mather in the History Department (401-874-4093 or [roderick@uri.edu](mailto:roderick@uri.edu)).

**Women's Studies.** See page 69.

**Writing.** See page 69.

## Preprofessional Preparation

Competition for seats in graduate professional schools is keen, and a superior academic record throughout college is necessary for admission to these schools. Since requirements for the professional schools vary in their "essential" and "recommended" subjects, students should consult the catalog of the professional school and then plan their undergraduate programs accordingly.

Those seeking careers as social workers can enroll as majors in sociology, including in their curriculum the social welfare courses. A basic foundation for graduate study, whether directed toward college teaching or research careers, can be provided through any of the liberal arts or science majors. The Bachelor of Arts curriculum provides specific majors for those planning to become journalists or public school teachers.

**Communicative Disorders.** Students who are interested in applying to the graduate program in communicative disorders, and who have not taken the undergraduate requirements, may wish to enroll as post-baccalaureate (non-matriculating) students to fulfill or begin to fulfill these requirements. The undergraduate requirements—courses needed prior to taking graduate courses—include CMD 372, 373, 374, 375, 376, 377, and 465. Completion of these courses does not, however, assure admission into the graduate program, nor is completion of all the requirements essential for application to the program. Any required undergraduate courses not completed prior to graduate admission will be added to the graduate program.

**Health Professions—Premedical, Predental, and Preveterinary Programs.** The URI Health Professions Advisory Committee (HPAC) helps students preparing for medical school, dental school, veterinary school, or physician assistant programs. URI's Health Professions Advisory Committee offers students academic counseling and information on the admissions process.

Students should select their undergraduate major based on their own interests and abilities, choosing one carefully with appropriate advice from the HPAC. They should also make sure that their major provides a foundation of knowledge necessary for the pursuit of several career alternatives. It is not advisable for students to select their undergraduate majors solely or primarily to enhance their chances of being accepted by a professional school.

Students interested in completing required course work for entrance to postgraduate colleges of medicine, dentistry, or veterinary medicine or physician assistant programs must register with the HPAC secretary in the Biological Sciences Building, Room A-129; 401-874-2670.

**General Requirements.** For students preparing to apply to postgraduate programs of medicine, dentistry, physician assistantship, or veterinary medicine, the program of study includes courses in humanities, English and literature, basic sciences, mathematics, social sciences, and communication. These courses will fulfill basic admissions requirements. It is strongly recommended that students complete the required course work at the same time they meet undergraduate degree requirements. Any major or concentration is acceptable, provided that the minimum requirements for admission into a professional school are fulfilled. Ideally, these requirements should be substantially completed before a student takes the national admission test (MCAT, DAT, VAT, or GRE) in the spring semester of junior year. Recommended courses for fulfilling the basic admissions requirements follow, with the minimum required number of credits shown: Biology, 8 credits from the following (or their equivalents)—BIO 101, 201, 302, 304, 327, 329, 341, 352,

437, 453; MIC 211; Chemistry, 16 credits, including general inorganic chemistry (CHM 101 with Lab 102 and CHM 112 with Lab 114) and organic chemistry (CHM 227, 228, 226 [lab]); Physics, 8 credits, including PHY 111, 185, 112, 186, or PHY 203, 273, 204, 274, or their equivalents; and Mathematics, 6 credits through calculus, MTH 131 and 132, or MTH 141 and 142.

**Applying to Professional Schools.** Prior to submitting an application to a professional school, each candidate's credentials are evaluated by the Health Professions Advisory Committee. By the second semester of junior year, each applicant must provide the HPAC with the following items in writing: a request from the applicant to the HPAC for a letter of evaluation in support of their application to a medical, dental, physician assistant program, or veterinary school; an official report of their SAT scores from the testing agency, high school, or secondary school; official, recent academic transcripts of all college courses taken at URI and elsewhere; official reports of scores on the appropriate admission test (MCAT, DAT, VAT, or GRE) sent directly to the HPAC from the testing agency; an autobiography with a commentary on the way the applicant's career goals have developed; a description of all extracurricular activities; a description of all honors bestowed on the student; a description of volunteer hospital, dental, veterinary, or other health-related work; and a minimum of five letters of evaluation written by persons who can evaluate candidly the applicant's experience and ability to engage in professional and scientific study. Personal interviews with HPAC members are also held in the spring semester of junior year and included in the candidate's final evaluation. As a result of this evaluation, the HPAC determines the level at which the candidate will be recommended for admission to professional school.

**Premedical Studies.** Candidates should become familiar with their prospective medical schools' admission requirements. These are listed in "Medical School Admission Requirements," published annually by the Association of American Medical

Colleges. Copies of this reference and the requirements of certain medical schools are available from the HPAC secretary. Medical schools generally require at least a 3.50 grade point average and high scores on the required Medical College Admission Test (MCAT), taken preferably in the spring semester of the third undergraduate year.

**The URI–Brown Early Identification Program for Sophomores.** This plan early identifies and accepts URI students into Brown University's School of Medicine. To be eligible, you must be a Rhode Island resident who is highly motivated, exceptionally qualified, a graduate of a Rhode Island high school, and a sophomore with a cumulative grade point average of at least 3.50 after completing at least three semesters of academic work at URI. In December of each year, eligible students must apply in writing to the URI Health Professions Advisory Committee for nomination to this program. In early February, the HPAC conducts a careful evaluation of each applicant's academic and personal qualifications. A completed application and the committee's letter of evaluation for each nominated student are forwarded to Brown's dean of medicine. Final decisions to accept applications are made by the admissions committee at Brown. Two URI students per year are usually accepted into the program. When these candidates are accepted, they assume the same status as their Brown counterparts, and continue their studies at URI. They can major in any field of study, so long as they continue to show academic excellence while completing the required premedical courses. They are also invited to take one or two of their premed courses at Brown with their future classmates, and are included in various events sponsored by the Brown Medical Student Society.

**URI Postbaccalaureate Preprofessional Programs.** Potential premedical, predental, or preveterinary candidates who already have degrees from URI or other colleges must first consult with the URI health professions advisor. The HPAC secretary will arrange for an appointment, and candidates must register in writing at the secretary's of-

fice. They will be advised on completing the basic admission requirements prior to submitting an application. These students must be evaluated by the HPAC in the spring semester in order to be recommended to professional schools.

**Prelaw Studies.** For students who plan professional study of law, guidance and program advice are provided by the Pre-Law Advising Coordinator, Lawrence Rothstein (ler@uri.edu; 401-874-2730) and by several pre-law advisors. Students should contact Professor Rothstein as soon as possible after admission to the University to be placed on the Pre-Law Society email discussion listserv LAWURI.

In addition, students should consult the Law School Admissions Council (LSAC) Web site at [Isac.org](http://Isac.org) for information about law schools and the admissions process and visit the Pre-Law Home Resource Center on the second floor of Washburn Hall. LSAC finds it inappropriate, given the wide range of a lawyer's tasks, to prescribe either a set of prerequisite courses for prelaw students or preferred major departments. Rather, it recommends that students choose their majors according to their own individual intellectual interests and "the quality of undergraduate education" provided by various departments and colleges. "Shortly stated, what the law schools seek in their entering students is ... accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force." The association emphasizes that "the development of these fundamental capacities is not the monopoly of any one subject-matter area, department, or division."

**Teacher Education Programs.** The University of Rhode Island offers a variety of academic programs leading to teacher certification at both the undergraduate and the graduate levels. Undergraduate teacher education programs are offered by departments in the College of Arts and Sciences, the College of the Environment and Life Sciences, and the College of Human Science and Services. The School of Education and Office of Teacher Education provide the

coordination, planning, evaluation, and promotion of all teacher education programs at the University. The following programs are offered at the undergraduate level: early childhood education, elementary education, physical education, music education, and secondary education. The University also allows students enrolled in the elementary or secondary education program to complete course work for a middle level endorsement. To find specific program descriptions and information, refer to the index at the back of this catalog.

**Admission.** Students interested in undergraduate teacher education programs are required to apply for admission to the Office of Teacher Education. Applications for admission to teacher education programs are normally submitted during the sophomore year. For early childhood, elementary, secondary, music, and physical education, students develop an application portfolio. Applications will be reviewed by a departmental screening committee based on the following criteria: 1) recommendations from faculty and others who have knowledge of the candidate's experience or interest in working in education; 2) a writing sample expressing career goals, experience in working with children, and expectations as a teacher; 3) passing scores on the PPST: Reading 172, Writing 171, Math 171; or a score of 1100 on the SAT; 4) the student's academic record, including a cumulative grade point average of 2.50 or better and grades in the academic major or specialization averaging 2.50 or better. Individual departments or programs may also require an interview.

Transfer students should be advised that academic work completed at URI is a primary factor in the admission decision. Therefore, students must complete one semester of work at the University before they can be considered for admission to the teacher education programs. This may extend the time required for degree completion.

Students in the School of Education graduate and undergraduate certification and licensure programs will be required to take and pass a content area exam(s)

in their area of certification and any other exam required for state licensure prior to student teaching or final internship.

CCRI students majoring in early childhood education may apply to the URI Early Childhood Education Program directly from CCRI following the procedures outlined above. Acceptance into the program is contingent upon admission and enrollment at URI.

Admission to all programs is competitive, and applicants meeting the minimum criteria described above may not be admitted because of limited space. For additional information, students should consult as early as possible with the specific department in which they wish to enroll or their University College advisor.

Students denied admission can petition for a review of the decision. In such cases, the departmental screening committee meets to consider the appeal. Only exceptional circumstances will lead the appeal committee to override the academic record criteria (2.50 cumulative grade point average and 2.50 in the academic major or specialization).

Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students may reapply for admission to a teacher education program but should understand that this may delay their anticipated graduation date.

Admissions to teacher education programs at the graduate level are governed by the Graduate School in consultation with academic departments. Students with a bachelor's degree should consult this catalog's "Graduate Programs" section and departments regarding individual program requirements.

**Certification.** A teaching certificate is, for all practical purposes, a license to teach in a given state, at a specific level, and in a certain type of job. Rhode Island, like other states, requires its public elementary and secondary teachers to hold certificates to ensure that students are taught only by persons who meet specified standards of preparation, health, citizenship, and moral character. Students in the School of Education, graduate and undergraduate

certification and licensure programs, will be required to take and pass a content area exam(s) in their area(s) of certification and any other exam required for state licensure prior to student teaching or final internship. Contact the Office of Teacher Education for the passing scores required for each discipline.

Graduates of a state-approved teacher education program at the University are eligible to receive an initial teaching certificate in Rhode Island and in over 40 other states through the Interstate Certification Compact (ICC). However, states will grant certification through the ICC only for certifications offered by the state. For example, a state that does not have a certification program in early childhood education (nursery school through Grade 2) will not grant a certificate in that area to a graduate of the University's program in early childhood education without reviewing the student's transcript to see if it meets that state's guidelines for elementary education. Therefore, students interested in applying for certification in states other than Rhode Island should always contact the department of education in that state and ask: 1) if the state has the area of certification the student is interested in pursuing at URI; and 2) if the state grants initial teacher certification under the ICC to students who have graduated from a Rhode Island state-approved teacher education program. Also, the student should ask the department to mail the state's application materials for certification. If the state is a member of the ICC, graduates of URI are generally entitled to initial certification for a period of five years following their date of graduation. After receiving another state's certification application, the applicant should read the directions for certification carefully and submit all required documentation.

If the state in which you are requesting certification is not a member of the ICC or does not have certification for your area of study, you should ask that state's office of teacher certification to evaluate your transcript and indicate any courses or experiences you would need for certification in that state.

## Special Academic Opportunities

**English as a Second or Foreign Language.** English as a Second or Foreign Language is not remedial at URI. Non-native-speaking students who want to continue to perfect their English so as to enhance their chances of success in their studies may do so by taking English Language Studies 112 and 122, two regularly offered courses that count toward the written communication requirement in the general education program. Students who need these courses are strongly urged to take them in their freshman year. Call 401-874-9424 for more information.

**Feinstein Center for Service Learning.**

Established by a generous endowment from Rhode Island philanthropist Alan Shawn Feinstein in 1995, the Feinstein Center for Service Learning promotes the integration of service with academic study in order to enhance student learning and involvement with communities and their agencies. We believe that student involvement in meaningful activities will deepen civic responsibility and allow students to implement what they are learning in the classroom. Active involvement with community issues and concerns builds critical thinking and interpersonal skills and fosters an appreciation of larger social implications. Programs include Feinstein Enriching America Program, Feinstein Engaged Department Program, Service Learning Courses, Raise Your Voice: Student Action for Change, Scholarships for Service, Clearinghouse for Volunteers, and Jumpstart at URI. For more information contact the Feinstein Center for Service Learning at 401-874-7422 or online at [uri.edu/volunteer](http://uri.edu/volunteer).

**Honors Program.** The University Honors Program offers motivated students opportunities to broaden their intellectual development and strengthen their preparation in major fields of study. The program consists of courses in analytical thinking skills that prepare academically talented students to get the most from classes throughout their undergraduate years, a colloquium that brings distinguished authorities to campus

from across the nation, special tutorials in major concentrations of study, and independent research projects under the guidance of a faculty sponsor. Honors courses at the 100 and 200 levels treat general topics and usually count for general education credit in particular divisions. Those at the 300 and 400 levels are more specialized and often are used to fulfill the requirements of a major.

Students may take honors work if they meet the following standards: freshmen must have graduated in the upper 10 percent of their high school class or must submit a letter of recommendation from their high school principal or guidance counselor; sophomores, juniors, and seniors must have earned at least a 3.20 cumulative grade point average. (Under special circumstances, these eligibility requirements may be modified with the permission of the Honors Program director.)

Eligible students may participate in the Honors Program in one of two ways: they may take honors courses on an occasional basis, registering for any number or pattern of courses that interest them; or they may do honors work on a regular basis, meeting the specific requirements to receive the transcript notation "Completed the University Honors Program." To achieve this certification a student must complete a minimum of 15 honors course credits that meet the following requirements: 1) three credits at the 100 level; 2) three Honors Colloquium credits (HPR 201 or 202); 3) three credits at the 300 level (tutorial); 4) six credits at the 400 level, which may be either six credits of the Senior Honors Project (HPR 401, 402) or three credits of the Senior Honors Project (HPR 401) and three credits of the Senior Honors Seminar (HPR 411); and 5) a 3.20 grade point average for honors courses and a 3.20 cumulative grade point average.

The Honors Program houses the National Scholarships Office, which prepares students for prestigious national and international scholarship competitions. To learn more about this and other Honors opportunities, please visit [uri.edu/hpr](http://uri.edu/hpr).

**Marine and Environment-Related Programs.**

Interest in marine science and oceanography at the University dates back to the mid-1930s. Over the past three decades, this strong emphasis on marine studies has extended to environmental topics, developing into an array of undergraduate programs in the natural, physical, and social sciences.

There are more than two dozen majors with a marine or environmental focus offered by three of URI's colleges. In the College of Arts and Sciences, the majors are chemistry and chemical oceanography, and physics and physical oceanography. In the College of Engineering, URI offers chemical engineering, chemical and ocean engineering, ocean engineering, civil engineering, and mechanical engineering. In the College of the Environment and Life Sciences, the majors are aquaculture and fishery technology, biological sciences, biology, environmental economics and management, environmental horticulture and turfgrass management, environmental science and management, geology and geological oceanography, geosciences, landscape architecture, marine affairs, marine biology, microbiology, resource economics and commerce, and wildlife and conservation biology. Several of the majors are offered jointly with the Graduate School of Oceanography. The Graduate School of Oceanography also offers undergraduates a minor in oceanography (see page 38).

Undergraduates are encouraged to explore opportunities at the Narragansett Bay Campus for active participation in the oceanographic sciences. Juniors and seniors may spend an entire semester at the University's Bay Campus pursuing their individual marine interests, for which they receive full academic credit. They work as part of a research team in the laboratory and in the field under the direct guidance of the Graduate School of Oceanography faculty.

Working with academic advisors, students can identify their majors and select the courses best suited to their individual academic objectives and career goals. A list of relevant courses appears under "Marine

and Environmental Topics" in the course descriptions later in this catalog.

**National Student Exchange Program.**

The National Student Exchange (NSE) program offers URI students the opportunity to study at more than 180 participating colleges and universities in 55 states, U.S. territories, and Canadian provinces, paying in-state rates or URI tuition while maintaining their status as URI students. NSE offers the opportunity to explore new geographical areas, experience academic diversity, and study under different educational and social circumstances in various parts of North America. Financial aid is available to participants. For further information, contact the Office of International Education and National Student Exchange in Taft Hall.

**New England Land-Grant Student Exchange Program.**

Students with special academic interests can take advantage of the talent and resources available at the region's state universities without having to become a degree candidate at another institution. Under a cooperative agreement, URI students can study for one or two semesters at the other New England land-grant institutions if they wish to take a course, a sequence of courses, or part of a program not available at URI. Students participating in this program pay their normal URI tuition and fees and maintain their status as URI students. Advisors and members of the University College staff have more information about this program and its requirements.

**Office of Internships and Experiential Education (OIEE).**

The OIEE is an academic program that provides undergraduate students with opportunities for semester-long internships (fall, spring, and summer). The internship program is designed for motivated students who wish to apply classroom learning to field experiences in career related settings. Student interns are supervised by a qualified professional at their placement site and by a faculty advisor from their academic major. Students from most undergraduate curriculums may apply for part-time or full-time internships and may earn from 6-15 free-elective credits.

In order to apply to the program, a student must have a minimum GPA of 2.50 and junior or senior standing.

Students enrolled in internships are also required to participate in a seminar provided by the OIEE. The seminar is the graded portion of the internship experience based upon a portfolio project, a successful learning contract, a career/graduate school project, and other assignments used to help students connect their experience with their academic foundation. For more information, call the office at 401-874-2160.

**Rhode Island Interinstitutional Exchange.**

Full-time students matriculated at one of the public institutions of higher education in Rhode Island may enroll for a maximum of seven credits of their full-time schedule per semester for study at one of the other public institutions at no additional expense. Each institution will determine and maintain the integrity of the degree to be awarded. Students will be subject to the course selection process applicable at the receiving institution. Summer Session and Continuing Education registrants are not covered under this program. Students interested in this arrangement should contact Enrollment Services.

**Study Abroad.**

The Office of International Education and National Student Exchange sponsors University programs abroad, helps students make arrangements for foreign study, and maintains information about overseas study programs. The office also assists in the evaluation of credits from study abroad. The University sponsors exchange programs with universities in Denmark, England, France, Germany, Japan, Korea, Mexico, Norway, and Spain, and URI is a member of several consortiums that enable URI students to participate in programs throughout the world. URI also participates in the New England-Quebec and New England-Nova Scotia exchange programs, making study available on an exchange basis at any of 21 English- and French-speaking universities in these Canadian provinces.

Many of these exchange programs make study abroad available to URI students at a modest cost. The study abroad director

and advisors help students who wish to participate in these or other approved academic programs in choosing the appropriate programs, obtaining prior approval for courses to be taken abroad, and retaining matriculated status at URI during their absence from campus. Most forms of financial aid are applicable to study abroad. For further information, contact the Office of International Education and National Student Exchange, Taft Hall.

**Summer Sessions.** The University provides a full range of undergraduate and graduate course offerings during two five-week sessions on the Kingston and Providence campuses. Courses begin immediately after Commencement and are offered during day and evenings as well as on-line. Summer intensives are offered at varying dates in the alternate session, and a number of special programs, including study in foreign countries, internships, and clinical placements, are available. Students may attend either or both campuses and enroll in any summer session. Students who are not matriculated at URI who are expecting to apply summer credit to their academic degree program are advised to obtain prior approval from their home campus before registering. Maximum course load is seven credits per summer session, including simultaneous courses in the alternate session. Exceptions are allowed with permission of the student's academic dean.

## Military Science and Leadership (Army Reserve Officers Training Corps or "ROTC")

Military Science and Leadership (Army ROTC) is one of the nation's top leadership programs, with many benefits to joining. Military Science and Leadership (Army ROTC) is an elective curriculum students take along with required college classes. It gives students the tools, training, and experience that will help them succeed in any competitive environment. Along with great leadership training, Military Science and Leadership (Army ROTC) offers two-, three-, and four-year scholarships covering

full tuition and fees, book money, and a monthly allowance ranging from \$300 for freshmen to \$500 for seniors.

Because Military Science and Leadership (Army ROTC) is an elective, students can participate during their freshman and sophomore years, known as the Basic program, without any obligation to join the Army.

Enrollment in any Military Science and Leadership (Army ROTC) course allows students to compete for off-campus training at the following U.S. Army schools: Airborne, Air Assault, Northern Warfare, and Cadet Troop Leadership Training (CTLT).

*The Minor in Military Science and Leadership.* Completion of 18 credits of MSL course work is required.

Interested students should contact Joanne LaChapelle at 401-874-5459.

## Grades

**Grades and Points.** Student grades are reported as A, A-, B+, B-, C+, C, C-, D+, D, and F. The unqualified letter grades represent the following standing: A, superior; B, good; C, fair; D, low grade, passing; F, failure; S, satisfactory; U, unsatisfactory; NW, enrolled—no work submitted.

Grades are given grade point values as follows: A, 4.00 points; A-, 3.70 points; B+, 3.30 points; B, 3.00 points; B-, 2.70 points; C+, 2.30 points; C, 2.00 points; C-, 1.70 points; D+, 1.30 points; D, 1.00 points; F and U, 0 points. P, S, and NW are not calculated in the grade point average.

Grade reports are mailed to all students at their home addresses at the end of each semester. Midsemester grade reports are made available to all freshmen via the e-Campus system at the midpoint of each semester. These midterm reports are intended to alert freshmen to their academic status and to aid in advising. Midterm grades are not recorded on permanent academic records, nor are they figured into grade point averages.

A grade may be reported as "incomplete" only when course work has been passing but not completed due to illness or

another reason that in the opinion of the instructor justifies the report of incomplete. Undergraduate students must make arrangements with the instructor to remove the incomplete by the following midsemester. Incomplete grades not removed from an undergraduate student's record by the end of two years will remain on the student's permanent record.

Students are required to make up failures in required courses. The course should be repeated when next offered. No limit is placed on the number of times a course may be repeated, but the credit requirement for graduation is increased by the number of credits repeated. Students are not required to make up failures in elective courses.

Certain courses do not lend themselves to precise grading, and for these courses only S (satisfactory) or U (unsatisfactory) will be given to all students enrolled. S/U courses are labeled as such in the course descriptions in this catalog. S/U courses are not counted as courses taken under the Pass-Fail option.

**Pass-Fail Grading Option.** This plan encourages undergraduate matriculated students to increase their intellectual breadth and discover aptitudes in new areas of knowledge. A matriculated undergraduate student above the freshman level who is not on probation may register under this plan for courses considered to be free, unattached electives by the college in which he or she is enrolled. Courses designated in the student's curriculum as degree requirements, general education requirements, and military science courses may not be included. Nonmatriculating students are not eligible for the pass-fail grading option.

A student choosing to take a course under this plan must notify his or her advisor, academic dean, and the Office of Registration and Records, in writing, prior to the end of the add period of each semester. The instructor is not informed.

Grades will be P (pass) or F (fail). The P grade is credited toward degree requirements but not included in the grade point average. The F grade is calculated in the

same manner as any other failure. A student may change from the P-F option to grade by notifying Registration and Records in writing before mid-semester.

A student may elect no more than three P-F courses a semester and no more than two P-F courses during a summer.

**Second Grade Option.** Students may exercise a second grade option by repeating a course in which the student earned a C- or lower. Only courses that fall within the student's first 30 attempted credits taken at the University may be selected for this option. Students must exercise this option no later than the next two semesters for which the student registers after completing 30 credits. Transfer students may exercise the second grade option for courses taken during their initial semester at the University. This option must be exercised during the next two semesters for which they register after their initial semester. Only the grade earned when the course was repeated will be used in the calculation of a student's grade point average, and only the credits earned for the repeated course will apply toward the graduation requirements. All grades earned for a given course shall remain on a student's permanent academic record. To take advantage of this option, students must obtain approval from their academic deans and submit the appropriate form to Enrollment Services prior to mid-term of the semester in which the course is being repeated. The second grade option may be used only once per course.

## Dean's List

Undergraduate matriculated students who have achieved certain levels of academic excellence are honored at the end of each semester by inclusion on the Dean's List. The Office of Registration and Records will publish lists of students who have attained the required grade point average.

A full-time student may qualify for the Dean's List if he or she has completed 12 or more credits for letter grades and achieved a 3.00 grade point average.

A part-time student may qualify for Dean's List if he or she has accumulated 12 or more credits for letter grades and achieved a 3.00 grade point average.

## Probation and Dismissal

A student will be placed on scholastic probation if his or her overall cumulative grade point average falls below 2.00. For purposes of determining dismissal of part-time students, scholastic standing committees will consider an accumulation of 12 credits as the minimum standard for one semester's work.

A student will be dismissed for scholastic reasons when he or she has a deficiency of eight or more grade points below a 2.00 average after being on probation for the previous semester. A student on probation for the second successive semester who has a deficiency of eight or fewer grade points below a 2.00 average will continue on probation. At the end of the third semester of probation, a student will be dismissed. Students who obtain less than a 1.00 average in their first semester will be dismissed automatically.

A student subject to dismissal will be so notified by the dean, after which he or she will have five days to file a written appeal with the dean.

Students are expected to be honest in all academic work. Instructors have the explicit duty to take action in known cases of cheating or plagiarism. For details, consult the *University Manual* at [uri.edu/facsen](http://uri.edu/facsen).

## Leave of Absence

Occasionally, students are forced to take a semester or two off because of circumstances beyond their control. Others find they simply need a break from studying. For these students, taking a leave of absence might be wise. Students who have an approved leave of absence for a semester or a year may register for the semester in which they plan to return without applying for readmission. Undergraduate students can apply for a leave of absence through Enrollment Services.

## Withdrawal from the University

A student who wishes to withdraw from the University prior to the end of the semester or summer session shall do so according to procedures established by Enrollment Services. If the withdrawal process is completed satisfactorily and the student has cleared all financial obligations to the University, the date of withdrawal will be noted on the student's permanent academic record. No grades for the current semester will be recorded.

Students who withdraw from the University after the last day of classes but before a semester ends will be graded in all courses for which they are officially registered. If a student withdraws from the University after midsemester, grades will be recorded for any course that has an officially specified completion date prior to the date of withdrawal.

A student who withdraws from the University after midsemester and who seeks readmission for the next semester will be readmitted only with approval of the Scholastic Standing Committee for the college or school in which registration is desired.

## Graduation Requirements

To graduate, a student must have completed the required work for the curriculum in which he or she is enrolled with the minimum cumulative grade point average established by that curriculum. (If no minimum cumulative grade point average is specified by the curriculum, students must have an overall cumulative grade point average of at least a 2.00). In addition, students must abide by community standards as defined in the *University Manual* and *Student Handbook*.

The work of the senior year has to be completed at the University of Rhode Island. Exceptions must be approved by the faculty of the college in which the student is enrolled.

Any student who has met the requirements for a second bachelor's degree may be granted two bachelor's degrees and issued two diplomas.

Any student who has met the requirements for two separate majors within any single bachelor's curriculum has earned a double major and may have both fields listed on his or her permanent record.

Each undergraduate college has specific procedures for student requests for exceptions to courses of study or to other degree requirements or academic rules. Undergraduate students who seek exceptions to any University rule pertaining to their academic circumstances, including degree requirements and courses of study, may contact the offices of their respective college deans.

Students who complete at least 60 credits of their work at the University are eligible to graduate with distinction. Grades in all courses attempted at the University will be included in the calculation of the grade point average. Those who attain a cumulative grade point average at the time of graduation of at least 3.30 are recognized as graduating cum laude. Those who achieve a cumulative grade point average of at least 3.50 graduate magna cum laude, and those who attain a cumulative grade point average of at least 3.70 graduate summa cum laude.

## University Manual

University regulations governing matters such as conduct, grading, probation and dismissal, academic integrity, withdrawal from the University, and graduation requirements are fully explained in the *University Manual*, which is available for reference in the library and in the deans' offices or on the Web at [uri.edu/facsen](http://uri.edu/facsen).

Such rights and responsibilities are also described in the *Student Handbook*, which is available from the Office of Student Life and on the Web at [uri.edu/judicial/studenthandbook](http://uri.edu/judicial/studenthandbook).

# UNDERGRADUATE PROGRAMS



**T**he University aims to provide students with a range of knowledge and skills which can, with appropriate motivation and initiative, be used in a variety of ways after graduation.

The following undergraduate programs offered at the University of Rhode Island are presented by college.

Study options vary from the traditional liberal education to programs that are heavily vocationally oriented. Successful completion of any course of study at the University, however, does not guarantee that the student will find either a specific kind or level of employment.

Students interested in the career opportunities related to particular programs of study are encouraged to consult University College advisors, the appropriate department chairperson, or Career Services. For students who are uncertain about their career choices, the Counseling Center also offers help.



## UNIVERSITY COLLEGE

Jayne Richmond, *Dean*

Dean Libutti, *Associate Dean*

Jessica Boisclair, *Coordinator, Students in Transition Center*

Dania Brandford-Calvo, *Director, International Education*

David Hayes, *Coordinator, Academic Enhancement Center*

Winifred Kelley, *Coordinator, Advising Programs for Student Athletes*

Linda Lyons, *Coordinator, Advising Programs for Undeclared Students*

Sarah Miller, *Coordinator, Feinstein Center for Service Learning*

Kimberly Washor, *Coordinator, Internships and Experiential Learning*

University College offers incoming students a broad range of advising services and the opportunity to explore the variety of courses and programs available at the University before they commit themselves to a major in a degree-granting college. All

first-year students are enrolled in University College. Through its strong program of academic advising by faculty, University College's purpose is to assist new students in making a smooth transition to the University and to provide special assistance, programs, and events for all students. Our "Rhode Assistance" program provides early intervention services to students wanting help with various personal or academic challenges in the transition to college.

Advisors, who have regular office hours at University College in Roosevelt Hall, are faculty members who represent each of the majors in the degree-granting colleges. Each student is assigned an academic advisor who is a specialist in the area in which the student intends to major or who has a particular interest in working with students who are undecided about their choice of major. Advisors help students select and schedule the right courses, become familiar with University procedures and programs, and obtain whatever assistance they need. They also help student-athletes.

If more students seek access to a program than can be accommodated due to limited facilities or faculty, those students who have shown the highest promise for academic success in the program will be admitted first. Where such limitations exist, the student must apply for acceptance in the program under conditions established by the specific department or college. This applies specifically to programs that have been declared "oversubscribed" by the vice president for academic affairs. Students who cannot be admitted to the program of their first choice can request entry into another program for which they have satisfied the entrance requirements, or they can spend one or two additional semesters in University College preparing to qualify for another program.

## COLLEGE OF ARTS AND SCIENCES

Winifred E. Brownell, *Dean*

Wilfred P. Dvorak, *Associate Dean*

Robert C. Bullock, *Associate Dean*

Earl N. Smith III, *Assistant Dean*

Jonathan L. Blaney, *Business Manager*

The College of Arts and Sciences has two main objectives: to enable all students to understand our intellectual heritage, the physical and biological world in which we live, and our social, economic, and political development; and to provide programs of professional education in selected fields as well as a strong foundation for graduate study. The college has programs of study leading to the following degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and Bachelor of Music.

For information on prelaw, pre-physical therapy, premedical, pre dental, pre-veterinary, and teacher education programs, see pages 39-43.

### Curriculum Requirements

In order to earn a degree in the College of Arts and Sciences, the student must meet requirements in three main areas: the major, Basic Liberal Studies, and electives. A description of these areas follows.

**1. The Major.** Every student is required to specialize in a particular area or discipline called the major. The requirements for each major vary from field to field, and are described in this section. Any student who has met the requirements for two separate majors within the Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, or Bachelor of Music degree programs in the College of Arts and Sciences has earned a double major and may have both fields listed on the transcript.

A student must maintain a 2.00 grade point average in his or her major to meet graduation requirements. One-half of the total number of credits needed in a given major must be earned at the University of Rhode Island.

**Curricular Modifications.** In consultation with the advisor, and with the approval of the department chairperson, a student will be permitted to modify the normal requirements of the major. The decision of the department chair is final. Requirements outside the major may be modified only with approval of the Scholastic Standing and Petitions Committee of the College of Arts and Sciences. Petition forms are available in the Office of the Dean. Minimum grade point average and total credit requirements are not petitionable.

**2. Basic Liberal Studies.** In the College of Arts and Sciences, general education requirements are called Basic Liberal Studies and are required of all students. This series of courses is intended to ensure that students have educational experiences that will help them to become informed and responsible participants in society and contribute to the full development of their individual capabilities. The Basic Liberal Studies program embodies the philosophy and fundamental knowledge that characterizes an arts and sciences education.

The following courses are approved by the College of Arts and Sciences to fulfill Basic Liberal Studies requirements. For an explanation of course codes, see pages 159-160.

#### *English Communication*

*Writing (ECw):* ELS 112, 122; WRT 104, 105, 106, 201, 227, 235, 302, 303, 304 [D], 305 [D], 333.

*General (EC):* COM 100 [D]; LIB 120; PHL 101.

#### *Fine Arts and Literature*

*Fine Arts:* ARH 120 [D], 251 [D], 252 [D]; ART 101, 207; FLM 101 [D], 203 [D], 204 [D], 205 [D]; HPR 105; LAR 201; MUS 101 [D], 106 [D], 111, 292, 293 [D]; THE 100, 181, 351 [D], 352 [D], 381, 382, 383.

*Literature:* AAF 247 [D], 248 [D]; CLA 391 [D], 395 [D], 396 [D], 397 [D]; CLS 160 [D]; ENG 110 [D], 160 [D], 241 [D], 242 [D], 243 [D], 247 [D], 248 [D], 251 [D], 252 [D], 260 [D], 262, 263 [D], 264, 265, 280 [D], 300 [D], 302 [D], 303 [D], 304 [D], 355 [D], 357 [D], 358 [D]; FRN 309

[D], 310 [D], 320 [D]; PLS 233; RUS 391 [D], 392 [D]; SPA 305 [D], 306 [D], 307 [D], 308 [D].

#### *Foreign Language and Cross-Cultural Competence*

See page 50, Basic Liberal Studies requirements.

#### *Letters*

AAF 150 [D], 201 [D], 355 [D], 356 [D]; APG 327; BGS 392 [D]; CLS 160 [D], 235; EGR 316; ENG 110 [D], 160 [D], 243 [D], 251 [D], 252 [D], 280 [D], 355 [D], 356 [D]; HIS 111, 112, 113 [D], 114 [D], 116, 117, 118 [D], 130 [D], 132 [D], 141 [D], 142 [D], 145 [D], 146 [D], 150 [D], 160 [D], 171 [D], 172 [D], 180 [D], 304, 305, 310 [D], 311 [D], 314, 323 [D], 327 [D], 332 [D], 333 [D], 340 [D], 341 [D], 346 [D], 351 [D], 355 [D], 356 [D], 374 [D], 375 [D]; HPR 104, 105, 107, 203; JOR 110 [D]; LAR 202 [D]; LET 151L, 151Q, 151R [D]; PHL 103, 204, 210 [D], 212 [D], 215, 217 [D], 235, 314, 316 [D], 321, 322, 323 [D], 325 [D], 328 [D], 331 [D], 346, 355; PSC 341, 342; PSY 310; RLS 111 [D], 125, 126, 131 [D]; WMS 220 [D].

#### *Mathematical and Quantitative Reasoning*

BUS 111; CSC 201; HPR 108; MTH 107, 108, 111, 131, 141; MTH/PSC 109; STA 220.

#### *Natural Sciences*

APG 201 [D]; AST 108; AVS 101 [D]; BIO 101, 105, 106, 286 [D]; CHM 100, 101, 103, 112; GEO 100, 102, 103, 110, 120; HPR 109, 202 [D]; NFS 207; OCG 110, 123, 131; PHY 109, 111, 112, 140, 185, 186, 203, 204, 205, 273, 274, 275; PLS 150, TMD 113.

#### *Social Sciences*

APG 200 [D], 202, 203 [D], 301 [D]; CPL 200, 202, 300; ECN 100 [D], 201, 202, 306, 381 [D]; EDC 102 [D]; EEC 105, 310, 356; GEG 101 [D], 104 [D], 202; HDF 225; HPR 110 [D], 201 [D]; JOR 110 [D]; LIN 200 [D]; MAF 100; PEX 123; PSC 113 [D], 116 [D], 274 [D], 288; PSY 103 [D], 113 [D], 232 [D], 235 [D], 254 [D], 255 [D]; SOC 100 [D], 212 [D], 230 [D], 240 [D], 242 [D], 274 [D]; TMD 224; WMS 150.

## Basic Liberal Studies Requirements

Courses used to fulfill these requirements must be selected *from the list approved by the College of Arts and Sciences* (see previous page). Basic Liberal Studies requirements are designed only for students in the College of Arts and Sciences, but they also fulfill the University's General Education requirements.

Courses in a student's major may not be used to fulfill requirements in Fine Arts and Literature, Letters, Natural Sciences, or Social Sciences. Students completing a double major, however, may use courses from one major of their choice to fulfill these requirements.\*

### BACHELOR OF ARTS

#### English Communication: 6 credits

(3 must be in a writing course; the other 3 may be in another writing course at the 200 level or higher or may be selected from the general communication courses)

#### Fine Arts and Literature: 6 credits

(3 in Fine Arts; 3 in Literature)

#### Foreign Language/Cross-Cultural Competence: 6 credits

*Choose one of the following options:*

- Two-course sequence in a language studied for two or more years in high school through at least the 103 level in a modern language or 301 in a classical language
- Demonstration of competence through the intermediate level by examination or by successful completion of 104 in a modern language or 302 in a classical language
- Two-course sequence in a language not previously studied (or studied for less than two years in high school) through the beginning level (101, 102)
- Study abroad in an approved academic program. Summer programs, including the URI in England program, will not satisfy this requirement.

**Letters:** 6 credits\* (Must be from multiple disciplines.)

**Mathematical and Quantitative Reasoning:** 3 credits

**Natural Sciences:** 6 credits\* (Must be from multiple disciplines.)

**Social Sciences:** 6 credits\* (Must be from multiple disciplines.)

### BACHELOR OF SCIENCE, BACHELOR OF FINE ARTS, AND BACHELOR OF MUSIC

#### English Communication: 6 credits

(3 must be in a writing course; the other 3 may be in another writing course at the 200 level or higher or may be selected from the general communication courses)

#### Fine Arts and Literature: 6 credits

(3 in Fine Arts; 3 in Literature)

#### Foreign Language/Cross-Cultural Competence: 6 credits

*Choose one of the following options:*

- Two-course sequence in a language studied for two or more years in high school through at least the 103 level in a modern language or 301 in a classical language
- Demonstration of competence through the intermediate level by examination or by successful completion of 104 in a modern language or 302 in a classical language
- Two-course sequence in a language not previously studied (or studied for less than two years in high school) through the beginning level (101, 102)
- Study abroad in an approved academic program. Summer programs will not satisfy this requirement.
- Two courses in cross-cultural competence selected from the following list: CPL 300 [D]; FRN 309 [D], 310 [D], 320 [D]; HIS 132 [D], 171 [D], 172 [D], 180 [D], 311 [D], 327 [D], 374 [D], 375 [D]; LET 151L,Q,R; NRS 300; PHL 331 [D]; RLS 131 [D]; SPA 320; TMD 224 [D]. Six credits of a full-semester approved Intercultural Internship in a foreign country through the Office of Internships and Experiential Education may be substituted for cross-cultural competence courses.

**Letters:** 6 credits

**Mathematical and Quantitative Reasoning:** 3 credits

**Natural Sciences:** 6 credits

**Social Sciences:** 6 credits

\* Students may use only *one course per discipline* (as identified by the course code) to fulfill requirements in Letters, Natural Sciences, and Social Sciences. For an explanation of course codes, see pages 159–160.

**3. Electives.** Electives are courses that are not included in the Basic Liberal Studies or major requirements, and that students may freely select to earn the total number of credits required for graduation. Many students use their elective credits to develop a second major or a minor field of study (see page 35).

**Course Load.** No student may take more than 19 credits per semester without permission from the dean. Students on academic probation are limited to 15 credits.

**Repeating Courses for Credit.** Unless otherwise stated in the course description, a course may not be repeated for credit. Credit can be counted only once toward the total credits required for graduation.

**Study Abroad.** Students eligible for the Study Abroad option to fulfill the Basic Liberal Studies Foreign Language and Culture requirement must enroll for full-time study in an approved academic program for one semester. Summer programs are not approved for this option. Students must successfully complete a minimum of six credits to have their requirement satisfied.

**Graduation.** *It is the responsibility of the student to be familiar with University and College requirements and to file for graduation with the Office of the Dean.* Deadlines for filing are as follows:

May Graduation—October 1

August Graduation—April 1

December Graduation—August 1

Seniors completing their final course work off campus must file a Senior Off-Campus Study Form with the Office of the Dean and should file for graduation before leaving campus.

## Bachelor of Arts

The Bachelor of Arts curriculums provide a general cultural background and an opportunity to major in any one of 36 fields of study.

Each candidate for a B.A. degree must meet certain minimum curricular requirements in quantity and quality. These requirements include at least 120 passed

credits, with at least 42 credits in courses numbered 300 or above, and an overall grade point average of at least 2.00. In addition to meeting the requirements of the Basic Liberal Studies program, each candidate must complete a major and a number of elective courses. The major totals 27–36 credits.

The B.A. major is the discipline or subject area in which the degree is granted. It may include not only required courses within the major department but also courses in related subjects. Students should declare this major before the end of their fourth semester.

The major comprises no fewer than 27 nor more than 36 credits. These, however, are exclusive of any credits that are outside the major department but may be required by that department as prerequisites. Including such prerequisites, the major may not exceed 39 credits.

Students may earn up to 15 credits in their major department in addition to those required for the major as identified by course code, counting as electives those credits earned in excess of the major requirements. Any credits in excess of this number in the major will not count toward the 120 credits required for graduation.

At least half of the credits in the major must be earned at URI.

*Majors include:* African and African-American studies, anthropology, art (history and studio), chemistry, classical studies, communication studies, comparative literature studies, computer science, economics, English, film media, French, German, history, Italian, journalism, Latin American studies, mathematics, music (music, jazz studies, and music history and literature), philosophy, physics, political science, psychology, public relations, sociology, Spanish, women's studies, and writing and rhetoric.

## Bachelor of Science

The Bachelor of Science curriculums are professionally oriented and, in general, meet the accreditation standards of national professional associations.

All candidates for the B.S. degree must fulfill the requirements of the Basic Liberal Studies program and complete a major of 30–55 credits within a department or program. In addition, a department may require for its major certain courses in other departments, with the stipulation that these courses may still be applied to the Basic Liberal Studies program requirements. Students must earn an overall grade point average of at least 2.00. No more than 130 credits can be required in a program. At least half the credits in the major must be earned at URI. Each major within the B.S. curriculum has certain more specific requirements, as listed on the following pages in this section.

*Majors include:* chemistry, chemistry and chemical oceanography, computer science, economics, mathematics, physics, physics and physical oceanography, and sociology.

## Bachelor of Fine Arts

URI's Bachelor of Fine Arts curriculums provide the opportunity to discover and develop creative capacities in the fine arts. The emphasis is on richness of program and quality of experience rather than the development of isolated skills. Further details and appointments may be obtained through the Office of Admission.

All candidates for the B.F.A. degree are required to meet the requirements of the Basic Liberal Studies program and to earn an overall grade point average of at least 2.00. At least half the credits in the major must be earned at URI.

*Majors include:* art and theatre.

## Bachelor of Music

The Bachelor of Music curriculum is designed to prepare qualified students for careers in the field of music. Students may select one of three majors depending on their aims and abilities. Admission requirements for the music education program are described on page 41.

All candidates for the B.M. degree are required to meet the Basic Liberal Studies requirements and to earn an overall

grade point average of at least 2.00. At least half the credits in the major must be earned at URI. Students are expected to attend department-sponsored events each semester.

*Majors include:* music composition, music education, and music performance (see pages 61–64).

All areas provide for a good background in academic subjects, and each curriculum contains courses for the development of sound musicianship and excellence in performance. An audition conducted by members of the Music Department is required for permission to register for work toward the B.M. degree. The music education curriculum includes courses in educational psychology, conducting, methods, and a teaching internship that leads to state certification for teachers.

The total number of credits required for graduation is 128 for music composition, 131 for music education, and 128 for music performance.

## African and African-American Studies

*Faculty:* Professor Hamilton, *director*. Professors Dilworth, Okeke-Ezigbo, and Weisbord; Associate Professors Harris, Quainoo, and Schwartz; Assistant Professor Ferguson; Adjunct Faculty Barber, Lafayette, and McCray.

The African and African-American studies program is an interdisciplinary program offered jointly by URI and Rhode Island College. Students in this program may take courses at either institution to fulfill major requirements. The program's objective is to broaden students' intellectual and global experiences through the study of Africa and African diaspora.

Students selecting this major must complete a minimum of 30 credits including AAF 201 and 202. Six credits must be selected from each of the following areas: *history and politics* (AAF 290, 300; AAF/HIS 150, 359, 388; AAF/PSC 380, 408, 410, 415, 466; PSC 372; WMS 351); *arts and humanities* (AAF/ARH 330, 331; AAF/ENG 247, 248, 360, 362, 363, 364, 474); and

*social and behavioral science* (AAF 300; AAF/COM 333; COM 310A, 465). The remaining 6 credits must be chosen from courses approved for the above groups.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

A minor is also available (see page 35).

## Anthropology

The Department of Sociology and Anthropology offers the degree of Bachelor of Arts (B.A.) in anthropology.

*Faculty:* Professor Loy, *chairperson*. Professors LaVelle, Poggie, and Pollnac; Assistant Professors Bovy and Lauer.

Students desiring to major in anthropology must complete a total of 30–31 credits (maximum 45 credits) in anthropology including *introductory courses*: APG 200, 201, 202, and 203 (12 credits); *methods courses*: APG 300, 302, 317, 412, or 417 (3 to 4 credits); *theory courses*: APG 401 (3) and APG 327 or 417 (3), for a total of six credits.

*Note: APG 417 may be taken to fulfill either the methods or theory requirement, but not both.* The remaining eight to nine credits may be any APG course. No more than six credits in independent study and/or field experience courses may be used toward the 30–31 credits required for the major.

It is strongly recommended that anthropology majors take at least one course in inferential statistics (e.g., STA 308 or 409), complete a foreign language through the intermediate level, and gain computer proficiency. Early in the junior year, students who plan to go on to graduate school should meet with their advisor for curricular counseling.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Art and Art History

The Department of Art offers a Bachelor of Arts (B.A.) degree with a major in either art or art history, and a Bachelor of Fine Arts (B.F.A.) degree in art.

*Faculty:* Professor Pagh, *chairperson*. Professors Dilworth, Klenk, Onorato, Richman, and Roworth; Associate Professors Hollinshead, Matthew, and Wills; Assistant Professors Anderson and Hutt; Professors Emeriti Calabro, Fraenkel, Holmes, Leete, Parker, and Rohm.

## BACHELOR OF ARTS

**Art.** It is recommended that students intending to major in art plan to complete foundation studio courses (ART 101, 103, 207) and one art history course (ARH 251 or 252) in the freshman year. For graduation, a minimum of 36 credits in the major (maximum 51) must be completed, including: studio courses ART 101 (3), 103 (3), and 207 (3); art history courses ARH 251 (3), 252 (3); and two art history electives (6) at the 300 level or above, one of which must be selected from the following modern or contemporary art courses: ARH 331, 363, 364, 374, 375, 376, 377, 380 (with topic approved by chair), 461, 462, 480 (with topic approved by chair).

During the first semester of the sophomore year, all B.A. candidates in art must participate in ART 002 Sophomore Review. To participate, students must have a 2.30 grade point average in the foundation courses (ART 101, 103, 207) and submit a one-page statement of purpose.

An additional six (6) credits must be selected from one of the following sequences of studio courses: ART 204, 304; 208, 309; 213, 314; 215, 316; 221, 322; 231, 332; 233, 334; 243, 344. This sequence must be completed by the end of the junior year. An additional three (3) credits of studio art on the 200- or 300-level must be selected.

In the senior year, an additional six (6) credits must be selected from 300- or 400-level studio courses (except 301).

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies program and take 24–39 credits in art and 12 credits in art history. Of the 120 credits required for graduation, 42 credits must be in courses numbered 300 or above.

**Art History.** It is recommended that students intending to major in art history plan to complete a minimum of six credits in the history of art by the end of the sophomore year. For graduation, students must complete a minimum of 30 credits (maximum 45 credits) in art history, including ARH 251 and 252 (6). At least 12 credits must be taken from ARH 354, 356, 359, 363, 365. An additional six credits must be taken from the preceding group or one or more 200 or 300 level ARH courses except ARH 300, 371, or 372. An additional six credits must be taken at the 400 level. At least three of these credits must be taken from ARH 461, 462, 475, 480. It is recommended that students who expect to pursue graduate studies in art history take ARH 469 or 470.

It is recommended that students majoring in art history achieve intermediate-level proficiency in at least one foreign language. Students anticipating graduate study in art history may need proficiency in a second foreign language. Students are also encouraged to enroll in courses in art studio, history, literature, music, and philosophy.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies program and take 30–45 credits in art history. Students may use an approved course in art studio to satisfy Basic Liberal Studies requirements. Of the 120 credits required for graduation, 42 credits must be in courses numbered 300 or above.

## BACHELOR OF FINE ARTS

It is recommended that students intending to enter the B.F.A. program complete foundation courses (ART 101, 103, 207) and one art history course (ARH 251 or 252) in the freshman year. B.F.A. majors should complete a minimum of 24 credits in ART courses by the end of the sophomore year.

Students in the B.F.A. program must complete a minimum of 72 credits in the major. Art courses required of all majors include ART 101 (3), 103 (3), 207 (3), 208 (3), either 213 or 215 (3), 405 (3), 406 (3) (with departmental permission) or six credits of ART at the 400 level (6). An additional 12 credits must be selected from 200-level

ART courses, and an additional 24 credits must be selected from 300- or 400-level ART courses.

During the first semester of the sophomore year, all B.F.A. candidates must participate in ART 002 Sophomore Review. To participate, students must have a 2.30 grade point average in the foundation courses (ART 101, 103, 207) and submit a one-page statement of purpose.

B.F.A. students must take 15 credits in art history, including ARH 251, 252, an additional three (3) credits at the 200 or 300 level, and six (6) credits at the 300 level or above, three of which must be selected from the following modern or contemporary art courses: ARH 331, 363, 364, 374, 375, 376, 377, 380 (with topic approved by chair), 461, 462, 480 (with topic approved by chair). Note: Only 3 credits from ARH 374, 376, or 377 may be used toward the 72 credits required for the major.

A minimum of 120 credits is required for graduation, including the following: major requirements in art (57), and art history (15). Students must meet the requirements of the Basic Liberal Studies program and may not use an ARH or ART course to fulfill the Fine Arts category of this requirement.

## Chemistry

The Department of Chemistry offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in chemistry.

*Faculty:* Professor Euler, *chairperson*. Professors C. Brown, Dain, Fasching, Freeman, Kirschenbaum, Oxley, Rosen, Smith, Vittimberga, and S. Yang; Associate Professor Lucht; Assistant Professors DeBoef and Major; Professors Emeriti P. Brown, Cheer, Cruickshank, Fisher, Goodman, Nelson, Rosie, and Traficante.

## BACHELOR OF ARTS

Students in this program must complete a minimum of 31 credits (maximum 45) in chemistry by taking either 10 credits as CHM 191, 192 or 8 credits as CHM 101,

102, 112, 114; and 20 credits as CHM 212, 226, 227, 228, 335, 431, and 432. One additional course must be chosen from CHM 401, 412, 427, or 441. CHM 191 can be substituted for CHM 101 and 102. CHM 229 and 230 may be substituted for CHM 226.

MTH 141 and 142 and one year of physics (PHY 111, 112, 185, and 186, or PHY 203, 204, 273, and 274) are required.

A total of 120 credits is required for the B.A. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF SCIENCE

Designed to prepare the student for a career in chemistry, this curriculum provides a thorough training in both theory and practice in the fields of analytical, physical, organic, biochemistry, and inorganic chemistry. Those who complete this curriculum are prepared to practice as a chemist, pursue graduate studies in chemistry, or enroll in a professional school in a related area such as medicine, dentistry, or pharmacy. Preprofessional studies can be focused through the use of electives.

The B.S. degree is accredited by the American Chemical Society Committee on Professional Training of Chemists. Graduates receive a certification card issued by the society and are eligible for senior membership after two years of experience in the field of chemistry. It is strongly recommended that WRT 101 or 201 be taken in the freshman year. CHM 425, 427 should be taken in the junior year by students planning research or advanced course work in organic chemistry. Six credits of "curriculum requirements" shall include either CHM 353, 354, or any 500-level courses with department approval.

B.S. students desiring the American Chemical Society option in chemistry/biochemistry must take BCH 481, 482 or BCH 581, 582. Six additional credits in undergraduate research (either CHM 353 and/or 354) are also required to satisfy requirements for advanced laboratory. CHM 353, 354 will be supervised by faculty with expertise in biochemistry. Students electing the chemistry/biochemistry option may

wish to take additional courses in molecular biology as electives.

A total of 130 credits is required for the B.S. degree. Accreditation guidelines require chemistry majors to take 55 credits toward the chemistry major.

*Freshman Year*

*First semester: 16–18 credits*

CHM 191 (5) (or CHM 101, 102 [4]); MTH 141 (4), language or free elective (3), Basic Liberal Studies requirements (5–6).

*Second semester: 16–18 credits*

CHM 192 (5) (or CHM 112, 114 [4]); MTH 142 (4), language or free elective (3), Basic Liberal Studies requirements (5–6).

*Sophomore Year*

*First semester: 17 credits*

CHM 212 (4), 227 (3); MTH 243 (3); PHY 203, 273 (4), language or Basic Liberal Studies requirements (3).

*Second semester: 18 credits*

CHM 226 (2), 228 (3); MTH 244 (3); PHY 204, 274 (4), language or Basic Liberal Studies requirements (6).

*Junior Year*

*First semester: 15 credits*

CHM 335 (2), 431 (3); PHY 205, 275 (4); Basic Liberal Studies requirement (3), free elective (3).

*Second semester: 17 credits*

CHM 412 (3), 414 (2), 432 (3); Basic Liberal Studies requirements (6), free elective (3).

*Senior Year*

*First semester: 14–19 credits*

CHM 401 (3), 425 (2), 427 (3), curriculum requirements (3–6), free electives (3–5).

*Second semester: 15 credits*

CHM 492 [capstone] (1), 402 (2), 441 (3), free electives (9).

## Chemistry and Chemical Oceanography

The Department of Chemistry and the Graduate School of Oceanography offer a Bachelor of Science (B.S.) degree in chemistry and chemical oceanography. The faculty consists of the members of the department and the GSO's chemical oceanography faculty.

*Coordinator: Professor Euler (Chemistry).*

The program is designed to prepare students for careers in chemistry or chemical oceanography. This curriculum provides a thorough training in both theory and practice in the fields of analytical, physical, organic, inorganic, and oceanographic chemistry. Those who complete this curriculum are prepared to continue with graduate study leading to an advanced degree in chemistry or in chemical oceanography, to teach, or to enter specialized fields in development, control, technical sales, and research in the chemical or oceanographic industries. It is strongly recommended that WRT 101 or WRT 201 be taken in the freshman year.

A total of 130 credits is required for graduation.

*Freshman and Sophomore Years* follow the same program as B.S. in chemistry (see previous section).

*Junior Year*

*First semester: 14 credits*

CHM 335 (2), 431 (3); OCG 451 (3), Basic Liberal Studies requirement (3), free elective (3).

*Second semester: 15 credits*

CHM 432 (3); OCG 494 (3), Basic Liberal Studies requirements (6), free elective (3).

*Senior Year*

*First semester: 16 credits*

CHM 401 (3), 425 (2), 427 (3); OCG 493 (3), free electives (5).

*Second semester: 17 credits*

CHM 412 (3), 414 (2); OCG 521 (3), free electives (9).

## Chemistry and Forensic Chemistry

*See comment or html version of Catalog.* 

## Classical Studies

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in classical studies.

*Faculty: Professor Suter, section head.*

Students selecting classical studies as a major must complete a minimum of 30 credits. Twenty-four of the 30 credits must be in Latin and Greek (only six credits of either LAT 101, 102, or GRK 101, 102 may count toward the required 24 credits) as follows: a) a minimum of six credits in each language (12); b) the balance of 12 credits in either or both language(s) (12). The remaining six credits must be from the following: ARH 354; CLA 391, 395, 396, 397; HIS 300, 303; PHL 321 (6).

Certification in secondary education in Latin is available through the Department of Education.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Communication Studies

The Department of Communication Studies offers the Bachelor of Arts (B.A.) degree in communication studies.

*Faculty: Associate Professor Derbyshire, chairperson. Professors Brownell, Chen, Grubman-Black, Ketrow, N. Mundorf, Salazar, Silvia, Swift, and Wood; Associate Professors Leatham, K. McClure, Quainoo and Ye; Assistant Professors DiCioccio, Johnson, and Torrens; Director of Debate Maar; Instructors S. Brown, Cabral, Conlon, Fonseca, Greenwood, L. McClure, J. Mundorf, August, Nelson, Waitkun, and Wales; Professors Emeriti Anderson, Devlin, and Doody.*

URI's program in communication studies provides maximum flexibility in planning for a variety of academic and occupational goals. The curriculum is personalized for

each student. Although the student will play an important role in curriculum planning, his or her program is closely supervised by the advisor. Specific curricular, extracurricular, and internship programs are planned as integral parts of each student's program. Departmentally approved courses provide diversity or a more focused approach, depending on the student's needs and goals. Courses outside the department that relate to the student's needs and goals are also encouraged.

Courses in communication studies can count toward a minor in public relations when taken in conjunction with specific journalism and marketing courses.

Students selecting this major may pursue studies in business and professional communication, communication theory, oral interpretation, rhetoric and public address, public relations, radio and TV advertising, and similar career goals.

Students must achieve a minimum grade of B- in COM 100 in order to transfer to the College of Arts and Sciences with a major in Communication Studies. The program requires a minimum of 36 credits (maximum 51) in the major, including COM 202, 221, 381, 382, and 383. The remaining credits will be distributed as follows: at least two courses (6 credits) of COM 200 level; at least two courses (6 credits) COM 300 level; and at least three courses (9 credits) COM 400 level. Courses of independent study and internships do not fulfill the requirements for the major.

Communication studies majors interested in a communication/music-related career may complete a second major in music. Contact Professor Wood for more information.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Comparative Literature Studies

The Department of English and the Department of Modern and Classical Languages and Literatures offer jointly the Bachelor of Arts (B.A.) degree with a major in comparative literature studies.

*Coordinator:* Professor Manteiga (Modern and Classical Languages and Literatures).

The choice of courses in a student's major and in the area of special interest must have both sufficient range (genre, period, and at least two literatures) and a specific focus. It must be approved by an advisor and filed with the dean's office.

Students in the comparative literature studies program fulfill the Basic Liberal Studies Fine Arts and Literature requirement by taking three credits in Fine Arts and three credits in Literature over and above their major literature requirements.

Students must complete a minimum of 30 credits in one of the following options:

**1. English and One Foreign Literature in the Original Language.** Nine credits in English and/or American literature, 300 level or above; nine credits in one foreign literature; three credits in literary theory or criticism (CLS 350). The remaining credits are to be taken from the comparative literature core courses or the literature courses in English or Modern and Classical Languages and Literatures departments.

**2. Two Foreign Literatures in the Original Language.** Nine credits in each of two foreign literatures; three credits in literary theory or criticism (CLS 350). The remaining courses are to be taken from the comparative literature core courses or the literature courses in the English or Modern and Classical Languages and Literatures departments.

**3. World Literature in English Translation.** Three credits in the nature of language from APG/LIN 200 or APG/LIN 220; three credits in literary theory or criticism (CLS 350); at least one foreign literature in translation course. In addition, the student must take 12 credits in a language beyond the 102 level. The remaining credits are to be taken from the comparative literature core and/or literature courses offered by the English and Modern and Classical Languages and Literatures departments.

Up to 6 credits of film media courses may be applied toward the major for any of the three options described above,

providing the film media courses have an international scope.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Computer Science

The Department of Computer Science and Statistics offers the Bachelor of Arts (B.A.) and the Bachelor of Science (B.S.) degree in computer science. The department also co-sponsors the B.S. in computer engineering (described in the College of Engineering section). At the graduate level, the department offers the Master of Science (M.S.) degree in computer science, the Doctor of Philosophy (Ph.D.) in computer science, and the Doctor of Philosophy (Ph.D.) in applied mathematical sciences with a specialization in computer science.

The department also offers a 24-credit minor in computer science (see page 56).

*Faculty:* Professor Kowalski, *chairperson*. Professors Fay-Wolfe, Lamagna, and Peckham; Associate Professors Baudet and DiPippo; Assistant Professors Hamel and Hervé; Adjunct Assistant Professors Encarnação, Henry, Ravenscroft, and Stephenson; Professors Emeriti Carney and Carrano.

Students majoring in computer science who leave URI and are subsequently readmitted must follow the computer science curriculum requirements in effect at the time of their readmission unless an exception is granted by the department chairperson and approved by the dean.

## BACHELOR OF ARTS

The B.A. curriculum is designed to provide a solid foundation in the fundamentals of computer science.

Students in the B.A. curriculum must complete a minimum of 36 credits (maximum 51) as follows: CSC 110 (4), 211 (4), 212 (4), 301 (4), 305 (4), 320 (4); one of 411 or 412 (4); two of 402, 411, 412, 436, or 481 (8). Also required are MTH 141 (4) and 215 (3); one COM course (3); and two WRT courses from among WRT 104, 105, 201, or 333 (6).

A total of 121 credits is required for graduation; at least 42 of these credits must be at the 300 level or above.

## BACHELOR OF SCIENCE

The B.S. curriculum is designed to provide a broad introduction to the fundamentals of computer science including software and systems, programming languages, machine architecture, and theoretical foundations of computing. The required mathematics preparation provides a basis for advanced work. Students will be well prepared for careers or graduate study in computer science.

Students in the B.S. curriculum must complete a minimum of 56 credits as follows: CSC 110 (4), 211 (4), 212 (4), 301 (4), 305 (4), 340 (4), 411 (4), 412 (4), 440 (4), 499 (8); 12 additional credits chosen from CSC 320 (4), 350 (4), 402 (4), 406 (4), 415 (4), 436 (4), 445 (4), 481 (4), including either CSC 350 or 445.

Students also complete MTH 141 (4), 142 (4), 215 (3), 243 (3); PHY 203, 273 (4), 204, 274 (4) or PHY 213, 285 (4), 214, 286 (4); one COM course (3); and two WRT courses from among WRT 104, 105, 201, or 333 (6).

A total of 129 credits is required for graduation. A possible course of studies follows.

### Freshman Year

#### First semester: 15 credits

CSC 110 (4); MTH 141 (4); URI 101 (1); WRT 104 (3), Basic Liberal Studies requirements or electives (3).

#### Second semester: 17 credits

COM 101 (3); CSC 211 (4); MTH 142 (4), Basic Liberal Studies requirements (3), electives (3).

### Sophomore Year

#### First semester: 17 credits

CSC 212 (4); MTH 243 (3); PHY 203, 273, (4), Basic Liberal Studies requirements or electives (6).

#### Second semester: 17 credits

CSC 301 (4); MTH 215 (3); PHY 204, 274, (4); WRT 333 (3), Basic Liberal Studies requirements or electives (3).

#### Junior Year

##### First semester: 15 credits

CSC 305 (4), 411 (4), CSC elective (4), Basic Liberal Studies requirement (3).

##### Second semester: 15 credits

CSC 340 (4), 412 (4), CSC elective (4), Basic Liberal Studies requirement (3).

#### Senior Year

##### First semester: 17 credits

CSC 440 (4), 499 (4), Basic Liberal Studies requirement (3), electives (6).

##### Second semester: 16 credits

CSC 499 [**capstone**] (4), CSC elective (4), electives (8).

## MINOR IN COMPUTER SCIENCE

Students declaring a minor in computer science must earn 24 credits including CSC 211 (4), 212 (4), 301 (4), and two other CSC courses at the 300-level or above (8). In addition, students are expected to complete MTH 141 (4).

## INTERNATIONAL COMPUTER SCIENCE PROGRAM

The Computer Science Department, under the auspices of the International Engineering Program (IEP) and the Department of Languages, also provides students the opportunity to participate in the International Computer Science Program (ICSP).

Students who complete the five-year program will earn two degrees: a B.S. or B.A. degree in computer science and a B.A. degree in German, French, or Spanish. In addition to computer science courses, students study the language, business, and culture of one or more countries in which the language predominates. Additionally, students will spend six months abroad in a professional internship in a European, Latin American, or Caribbean country, and can extend the stay by completing a semester

of course work at a participating university. Upon graduation, students will be well prepared to participate at an international level in computer technology and to compete in the international technological marketplace.

## Economics

The Department of Economics offers a Bachelor of Arts (B.A.) and a Bachelor of Science (B.S.) degree in economics.

**Faculty:** Professor Ramsay, *chairperson*. Professors Burkett, Lardaro, McIntyre, Mead, C. Miller, Ramstad, Starkey, and Suzawa; Professor Emeritus Sharif.

## BACHELOR OF ARTS

Students selecting this field must complete a minimum of 33 credits (maximum 48) in economics, including ECN 201 and 202 (6), 305 and 306 (6), 324 or 327 (3), 323 or 328 (3), and 445 (3).

In addition, at least 12 credits must be completed from economics courses numbered 300 or above. Students may substitute up to six credits from other departments: three credits from statistics—BUS 210 (3), 212 (3), STA 308 (3), 409 (3), or 412 (3)—and three credits from another related course approved by the department chairperson. These substitutions must be filed with the Office of the Dean. Students planning to do graduate work in economics are encouraged to take ECN 375, 376 and at least one semester of statistics.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF SCIENCE

Students in this curriculum may elect one of two options, *applied economics* or *economic theory and methods*, and must inform the dean's office of the option.

**Applied Economics.** A minimum of 31 credits in economics including ECN 201, 202, 305, 327, 328, 375, 376, and 445. In addition, students must complete COM 101; BUS 212 or MTH 451 or STA 308.

**Economic Theory and Methods.** A minimum of 31 credits in economics including ECN 201, 202, 305, 327, 328, and 376. In addition, students must complete MTH 141, 142, 215, 243, 307, and 244 or 442 or 435. This option is recommended for students preparing for graduate study in economics.

A total of 120 credits is required for graduation.

## English

The Department of English offers a Bachelor of Arts (B.A.) degree. The department also offers the Master of Arts (M.A.) and Doctor of Philosophy (Ph.D.) in English. The Department of English offers (with the Department of Modern and Classical Languages and Literatures) the B.A. degree with a major in comparative literature studies (see page 55).

**Faculty:** Associate Professor Durand, chairperson. Professors Arakelian, Campbell, Cappello, Donnelly, Dvorak, Gititi, Leo, Okeke-Ezigbo, Stein, and Walton; Associate Professors Barber, Korno, Mandel, Swan, Trimm, and Vaughn; Assistant Professors Betensky, Covino, Dunson, Frankel, Jones, Rojas, and Williams; Professors Emeriti Burke, Cuddy, Neuse, and Pearlman; Associate Professors Emeriti Cane and Reaves.

Students selecting this field must complete a minimum of 36 credits (maximum 51), 18 of which must be at the 300 level or above. All students must complete ENG 201 and 202 (6). The remaining 30 credits must include one course from each of the following five periods (15): *pre-1500* (ENG 251, 366, 367, 368, 381, 382); *1500-1660* (ENG 241, 251, 280, 373, 382, 472); *1660-1800* (ENG 241, 251, 374, 480, 482); *19th century* (ENG 241, 242, 252, 347, 348, 375, 448); *20th century* (ENG 242; ENG/AAF 248; ENG 252, 348; ENG/AAF 362, 363, 364; ENG 378, 379, 383, 446, 447, 448, 469).

The remaining 15 credits may be fulfilled by taking any English courses at the 200-400 level that have not been counted toward a period requirement. If they wish,

students may choose to emphasize a 12-credit focus area by completing 12 credits in one of the following focus areas: *identity studies* (ENG/AAF 247, 248; ENG 260, 337, 338; ENG/AAF 363, 364; ENG 385 387); *genre studies* (ENG 243, 262, 263, 264, 265, 300, 304, 336, 339; ENG/AAF 362; ENG 446, 447, 448, 469); *creative writing and publishing studies* (ENG 205A, 205B, 205C, 305, 330; WRT 201, 235, 333); *cultural studies with period emphasis* (ENG 302, 332, 347, 348; ENG/CLS 350; ENG 351, 374, 375, 474; or any one 300- or 400-level course approved for one of the five periods). ENG 499, an optional **capstone** senior seminar (in which a senior thesis is written), may be taken for three of the 15 credits required to complete the major.

Note: Freshmen are not admitted to 300- or 400-level courses without permission of the instructor. Sophomores are discouraged from taking 100-level courses.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Film Media

The Film Media Program offers a Bachelor of Arts (B.A.) degree and a minor.

**Faculty:** John Leo, *director*. Professors Gititi, Manteiga, Onorato, Strom, Swift, Vocino, Walton, and Wood; Associate Professors Durand, Sama, Trimm, and Wills; Assistant Professors Healy, Hutt, Meagher, and Moore; Adjunct Professor DeSchepper; Adjunct Assistant Professors Bergstrom, Neugent, Smith, Tierney, and Zorabedian; Lecturers Romanow and Wolpaw.

**The Major.** This interdisciplinary major offers students a curriculum that reflects developments in the field of film and film-related media: the expanding and often overlapping technologies involved in the production of moving images (filmic, electronic, and/or cybernetic); the broadening of their cultural and aesthetic contexts (where cinematic practices extend into television, video games, computer imagery, and virtual reality); and the increasingly cross-disciplinary nature of the theoretical responses to these developments. A wide

range of courses is offered to acquaint students with the ways and means of production, distribution, and exhibition of moving images—courses that examine the historical, theoretical, and technological approaches to this field of study. A broad understanding is seen as essential because film and film-related media have become increasingly international and global enterprises.

Students majoring in film media must complete a minimum of 30 credits (maximum 45) in approved courses toward the major. All students must complete the core courses: FLM 101\*, FLM 203 (or ENG 302), FLM 204 (or FLM 205), including the senior-level seminar FLM 495; a minimum of 6 credits from the *production and technique* category and 6 credits from the *critical studies* category (following). This wide range of choices in film media courses permits students to design a major that will meet both personal and professional goals. Students must have a plan of study approved by an academic advisor in the film media program before beginning their coursework in the two categories.

\*HPR 105 Honors Study: *Understanding the Feature Film* (3) may be substituted for FLM 101.

**Production & Technique:** These courses focus on the different approaches to and practices of film/video production—how moving images are created, designed, and used to serve a variety of functions: ART 204, 215, 303, 304, 316, 417; COM 341, 342, 445; FLM 401; JOR 230 and 331.

**Critical Studies:** These courses emphasize the important traditions of genre and the literary and aesthetic approaches toward understanding and valuing film media, and integrates them into their broad historical, cultural, and ideological contexts: AAF 352; ARH 374, 376, 377; COM 346, 414; ENG 300, 302, 303, 304; FLM/ENG/CLS 451, FLM 491; FRN 320; HIS 358; ITL 315; JOR 110, 311; PHL 256X; SPA 320; and THE 182. Other courses may be used for this category with prior approval of the program director. The following topics courses have been pre-approved: CLS 450 *Hispanic*

*Stereotypes in Fiction and Film*, HPR 311 *Images of Masculinity in American Cinema*, HPR 311 *Rebel Images in American Films*, HPR 411 *Money & Misery*, HPR 411 *War Stories*, HPR 411 *Film and Video Practicum*, and WMS 350 *Women and Film*. Other film-based courses may count toward the major or the minor with the permission of the film media program director.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

**The Minor.** Students who declare a minor in film media must complete 18 credit hours (at least 12 at the 200-level or higher) from those courses currently eligible to count toward the major. Courses in general education may count toward the minor. All courses must be taken for a grade except for the internship (Field Experience). It is strongly suggested that at least one course in the minor be from each of the following two approaches to film and media study:

**Production.** These courses focus on the practices of film/video/media production, the design and creation of moving images.

**Criticism.** These courses address critical and theoretical approaches to film media and the broader contexts of international film history, genre, and ideology in which they are situated.

## French

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in French.

**Faculty:** Associate Professor Durand, *section head*. Professors Hammoud, Morello, and Rogers; Assistant Professor Erickson.

Students selecting this field are required to complete at least 30 credits (maximum 45) in French, not including FRN 101, 102, 391, 392, 393. They must take three credits from FRN 412, 473, or 474. Students must also complete a minimum of three additional FRN credits at the 400 level.

Additionally, students with proven competence in French language and literature,

with permission of the advisor, section head, department chairperson, and dean of the college, may take courses toward their concentration in related fields such as history, linguistics, art, or philosophy. Approval must be filed with the Office of the Dean.

Students completing the French International Engineering Program and the B.A. with a major in French simultaneously may use three credits of French literature toward the Fine Arts and Literature Basic Liberal Studies requirement. In addition, students in this program are exempt from the one-course-per-discipline rule in Letters, Social Sciences, and Natural Sciences.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## German

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in German.

**Faculty:** Professor Hedderich, *section head*. Professor Grandin; Associate Professors Kirchner and von Reinhart; Assistant Professor Rarick.

Students selecting this major complete at least 30 credits (maximum 45) in German, not including GER 101, 102, or 392. Students must complete six credits in literature, at least three of which must be taken at the 400 level, and must complete one additional 400-level German course. Students in the International Engineering Program must complete GER 411.

Students completing the German International Engineering Program and the B.A. with a major in German simultaneously may use three credits of German literature toward the Fine Arts and Literature Basic Liberal Studies requirement. In addition, students in this program are exempt from the one-course-per-discipline rule in Letters, Social Sciences, and Natural Sciences.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## History

The Department of History offers a Bachelor of Arts (B.A.) degree. The department also offers the Master of Arts (M.A.) degree in history.

**Faculty:** Associate Professor Schwartz, *chairperson*. Professors Cohen, Honhart, Klein, Strom, Thurston, and Weisbord; Associate Professors Ferguson, George, Mather, Pegueros, Rollo-Koster, Rusnock, and Sterne; Assistant Professor Buxton; Adjunct Assistant Professors Greenburg, Jensen, Reumann, and Rose; Professors Emeriti Findlay, Gutch, and Kim.

Students selecting this field must complete a minimum of 30 credits (maximum 45) in history, including a minimum of six and a maximum of 12 credits in courses numbered 100 to 299. The balance of required credits is in courses numbered 300 or above, including (1) HIS 401 or 441 or 481 and (2) HIS 495. The two 400-level courses should be taken in consecutive semesters with the same instructor. Under unusual circumstances, with permission of the department chairperson, a student may substitute, in place of the seminar, HIS 391 leading to a substantial research paper. **Capstone** courses in this major are HIS 401, 441, 481, and 495.

Undergraduates wishing to take courses on the 500 level must secure the permission of the chairperson.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Italian

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in Italian.

**Faculty:** Associate Professor Sama, *section head*. Assistant Professor LaLuna.

Students selecting this major must complete at least 30 credits (maximum 45), including at least two 400-level courses. ITL 101 and 102 may not be used toward the 30 credits required for the major. Students

may use up to three credits from ITL 391, 392, or 395 toward the 30 credits required for the major.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Journalism

The Department of Journalism offers the Bachelor of Arts (B.A.) degree.

**Faculty:** Professor Levin, *chairperson*. Professor Luebke; Assistant Professors Meagher and Moore; Lecturer Pantalone; Instructors Beardsworth, Berke, Cyr, Davey, Lord, and Walsh; Adjunct Assistant Professors Markin and Ward.

The study and practice of journalism require the acquisition and application of a broad base of knowledge. Therefore journalism majors at URI pursue a professional course of study that is strongly grounded in the liberal arts. Along with Basic Liberal Studies and elective courses from other disciplines, the major requires students to explore the concepts and practices of contemporary American journalism. Within a social, historical, legal, and ethical context, students acquire skills in gathering and synthesizing factual information and communicating it clearly to a variety of audiences. Journalism course work, through individual and collaborative assignments, focuses on reporting, writing, editing, and producing news for publication or broadcast.

Students who choose journalism as a minor can focus on public relations or media issues, print or broadcasting. For students majoring in other fields, the department offers courses that provide a forum on the role of mass media in society.

Students majoring in journalism must complete a minimum of 30 credits (maximum 45) in journalism. All journalism majors must complete JOR 115, 220, 310, and 410. In addition, students must select nine credits from skills courses: JOR 230, 320, 321, 330, 331, 340, 341, 342, 420, 430, 441; and three credits from conceptual courses: JOR 210, 211, 311, 313, 415. Any journalism courses may be chosen for the remaining six credits. Students are encouraged

to consult with their advisors about the mix of journalism courses that best meets their goals.

Journalism majors must fulfill some of their Basic Liberal Studies requirements by choosing from the following list of courses. The department has identified these courses as important preparation for students to both study and practice journalism.

**Fine Arts and Literature** (select one from each list) **List A:** ARH 120, 252; MUS 101; THE 100. **List B:** ENG 110, 241, 242, 251, 252; AAF/ENG 248; CLA/ENG 160. **Letters** (select one from each list) **List A:** HIS 142, 146, 150, 346; AAF 201. **List B:** PHL 103, 204, 212, 217; RLS 111. **Social Sciences** (select one from each list) **List A:** PSC 113, 288; CPL 200; ECN 100; GEG 104; PSC/SOC 274. **List B:** APG 203; SOC 240, 242; WMS 150. **Natural Sciences** Select one of the following and any course from the College of Arts and Sciences BLS Natural Sciences list (see page 49): AFS 210, 211; BIO 105; CHM 101, 102, 103, 105; PHY 111, 112, 185, 186. **Foreign Language/Cross-Cultural Competence** Students must meet the College of Arts and Sciences BLS Foreign Language/Cross-Cultural Competence requirements (see page 50). **Mathematical and Quantitative Reasoning** Select any course from the College of Arts and Sciences BLS Mathematical and Quantitative Reasoning list (see page 49). **English Communication** Select one of the following and complete any 3-credit WRT course from the College of Arts and Sciences BLS list (see page 49) with a grade of B or better: PHL 101; LIB 120.

The only journalism courses open to freshmen are JOR 110 (for nonmajors), 115 (for majors), and 220. Journalism majors are urged to concentrate on their Basic Liberal Studies requirements during their freshman and sophomore years. In addition to these required courses, other BLS courses are recommended as useful for journalism majors. Students should consult with their advisors about complete Basic Liberal Studies requirements and about other courses that meet their individual goals.

Students must earn a grade of C or better in a "skills" course (including JOR 220)

to enroll in the next-level course. Only three credits of JOR 220 may be used to satisfy graduation requirements.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Students majoring in journalism are also encouraged to pursue a minor. The Department of Journalism, in conjunction with the departments of Communication Studies and Marketing, has developed a minor in public relations (see page 39).

## Latin American Studies

The Departments of Sociology and Anthropology, History, and Modern and Classical Languages and Literatures offer a Bachelor of Arts (B.A.) degree in Latin American Studies (LAS).

**Faculty:** Associate Professor Morín, *LAS committee chairperson. Committee members:* Professors Gititi and Poggie; Associate Professors de los Heros, Pegueros, and C. White; Instructor Pisa; Professor Emeritus McNab. (Some Arts and Sciences faculty members not listed here offer courses that can fulfill the requirement for this B.A.)

Students selecting this field must complete a minimum of 36 credits as follows: APG 315, HIS 381, 382, and one additional history course dealing with the major; six credits in Spanish or Portuguese from the approved list; LAS 397; PSC 201; ECN 363; and nine credits of electives from the approved list of courses.

Students must file their program of study with the dean's office.

Credits leading to this B.A. may also be taken at foreign universities or other universities in the U.S. that offer programs in Latin American studies with the approval of the LAS Committee, as long as 15 credits in the major are taken at URI. Students are highly encouraged to participate in study abroad programs in Latin America.

A list of courses acceptable for this program can be found on page 235. Courses not listed are not necessarily excluded from this program, provided that the subject matter deals in some way with Latin America. The Latin American Studies Com-

mittee must approve the student's program including any course substitutions.

The LAS Committee will assist students in the formulation and approval of their programs. The current coordinator is Thomas Morín, associate professor of Hispanic studies in the Department of Modern and Classical Languages and Literatures.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Linguistics

Admission to the B.A. program in linguistics is currently suspended.

The Department of Modern and Classical Languages and Literatures offers a number of undergraduate courses in linguistics. The minor in linguistics is still available.

*Faculty: Professor K. Rogers, section head.*

## Mathematics

The Department of Mathematics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

For information on URI's minor in mathematics, see the end of this section.

*Faculty: Professor Pakula, chairperson.*  
Professors Beauregard, Clark, Eaton, Finizio, Grove, Kaskosz, Kulenovic, Ladas, Lewis, Merino, and Montgomery; Associate Professors Baglama, Kook, Thoma, and Wu; Assistant Professors Comerford and Medina-Bonifant; Professors Emeriti Datta, Driver, Fraleigh, Roxin, Schwartzman, Suryanarayanan, and Verma.

## BACHELOR OF ARTS

Students in the B.A. curriculum may tailor a program to suit their individual needs and interests. They should meet with their advisor no later than the end of the first semester of the sophomore year to plan a complete program. This program,

and any subsequent changes in it, must be approved by the advisor and the department chairperson. It must contain at least 32 credits (maximum 45) in mathematics, and include MTH 141, 142, 215, 243, and 316, plus 15 or more additional credits in mathematics, at least three credits of which must be at the 400 level.

MTH 107, 108, 111, 208, 362, 363, and 464 may not be taken by students majoring in mathematics.

A total of 120 credits is required in the B.A. curriculum. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF SCIENCE

Students in the B.S. curriculum may elect either the general program or the applied mathematics option. The Office of the Dean must be informed of any substitutions.

**General Program.** This program stresses basic theories and techniques, and includes an introduction to the principal areas of mathematics. It is recommended for students considering graduate study in mathematics. Students in this program must complete MTH 141, 142, 215, and 243. These courses should normally be taken in the freshman and sophomore years. Students must complete an additional 30 credits in mathematics, including MTH 316, 425, 435, 436, and 462. Students majoring in mathematics may not take MTH 107, 108, 109, 110, 111, 208, 362, or 420 for major credit.

**Applied Mathematics Option.** This program is intended for the student who anticipates a career as an applied mathematician or mathematical consultant with an organization such as an industrial or engineering firm or with a research laboratory. The student learns the mathematical ideas and techniques most often encountered in such work. Although a theoretical foundation is developed, the applications are emphasized. The student must take MTH 141, 142, 215, and 243, preferably by the end of the sophomore year. The student must complete an additional 18 credits in mathematics including one of the

sequences MTH 435, 436 or 437, 438, and nine credits from Group I (Mathematics). Also, the student must complete an additional four courses, one of which must be chosen from CSC 200, 201, 211, 212, PHY 410, or CHE 272, and three other courses chosen from Group II (Applications). At least nine math credits must be at the 400 level or above.

*Group I:* MTH 244, 316, 322, 418, 441, 442, 444, 447, 451, 452, 461, 462, 471, and 472. Other courses may be used for this group with prior permission of the chairperson. *Group II:* BIO 460; CHE 272, 313, 314; CHM 431, 432; CSC 340, 350, 440, 445; ECN 323, 324; ELE 313, 314, 322, 457; IME 412, 432, 433; MCE 341, 354, 366, 372, 466; PHY 306, 322, 331, 341, 410, 420, 451; STA 409, 412. Other courses may be used for this group with prior permission of the chairperson.

Both B.S. programs require 130 credits for graduation.

## MINOR IN MATHEMATICS

Students declaring a math minor must earn credit for MTH 141, 142, 243, or MTH 131, 132, 244; MTH 215; and two three-credit math courses chosen from MTH 307, 316, 322, or any 400-level course. At least one of these two courses must be at the 400 level. Substitutions may be made with permission of the chairperson.

## Military Science and Leadership (Army ROTC)

The Department of Military Science and Leadership (Army ROTC) is recognized as one of the best leadership programs in the country and is part of the University of Rhode Island curriculum. During classes and field training, students learn first-hand what it takes to lead others and motivate groups, as well as how to organize information to create executable tasks for others to follow. The experience is similar to being a vital manager in a corporation. Students learn to strive to achieve success within a team in every situation.

Students may participate in the basic program (MSL 101, 102, 201, and 202) without obligation to the United States Army.

Students desiring a minor in Military Science and Leadership may request approval from the dean of the College of Arts and Sciences upon beginning the program. Completion of 18 credits of MSL course work is required to complete the minor.

Along with providing leadership training, Military Science and Leadership (Army ROTC) can pay for college tuition. Scholarships are awarded based on a student's merit and grades, not financial need. Two-, three-, and four-year scholarships covering full tuition and fees are available. Scholarship recipients also receive book money to cover the expense of textbooks, as well as a monthly allowance ranging from \$300 for freshmen to \$500 for seniors, to assist with room and board.

*Faculty:* Professor Yager (Lt. Col., U.S. Army), *chairperson.* Assistant Professors Edwards, McGrath, and Raynor.

## Modern and Classical Languages and Literatures

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree in classical studies, French, German, Italian, and Spanish (described in alphabetical order), as well as course work in Arabic, Chinese, modern Greek, Hebrew, Japanese, Portuguese, and Russian.

The department offers jointly with the Department of English the Bachelor of Arts (B.A.) degree in comparative literature studies (see page 55).

*Faculty:* Professor Morello, *chairperson.*

## Music

The Department of Music offers a Bachelor of Arts (B.A.) degree with options in music, music history and literature, and jazz studies, and Bachelor of Music (B.M.) degrees in composition, music education, and performance. Programs are also available leading to double majors in music with

communication studies, elementary education, or psychology; and double degrees in music with computer science or business administration. The department also offers Master of Music (M.M.) degrees in music education or performance.

*Faculty:* Professor R. Lee, *chairperson.* Professors Dempsey, Kent, Ladewig, Livingston, and Pollart; Associate Professors Conley, Danis, and Parillo; Assistant Professors Aberdam, A. Cardany, and Takasawa; Lecturers de la Garza, Frazier, and Thomas; Director of Athletic Bands and Lecturer B. Cardany; Guest Artists/Teachers Acosta, Berney, Buttery, Caufield, Ceo, Gates, Gendron, Hofbauer, Kiefer, Kim, Murray, O'Connor, Platz, Porter, Sims, Sparks, Stabile, Uricco, Youmans, Zinno, and Zullinger; Music Resources and Facilities Coordinator Heroux; Preparatory Division Coordinator Murray; Coordinator of Music Education A. Cardany; Accompanists Chester, Mazonson, Uricco, and Zullinger; Piano Technician Flanders.

For information on the music minors, see the end of this listing.

### BACHELOR OF ARTS

Students selecting music as a major have three options: *music, music history and literature, or jazz studies.*

Transfer credits in music theory, music history, and performance must be validated by placement examination.

Music majors interested in a career in communication studies and music may complete a second major in communication studies. Bachelor of Arts degree candidates in music can also complete a double major with psychology or elementary education. The Music Department offers a double degree combining music (B.A. degree) with computer science or business administration (B.S.). Contact Professor Lee for more information.

**Jazz Studies.** Students selecting this option must complete 43 credits in musicianship and music performance as follows: *Musicianship:* MUS 119 (1) (fulfills URI 101 requirement), 120 (2), 121 (2), 122 (2),

225 (2), 226 (2), 424 (3), 106 (3), 221 (World Music Unit) (1), 222 (3), 322 (Jazz and Popular Music Units) (2), 280 (0), 480 (1). *Music Performance:* **A:** Six semesters of applied music study in the student's principal area of jazz instrumental performance, at 2 credits per semester (12). A successful audition is required prior to study in the principal applied area of jazz instrumental performance. Students must pass an end-of-the-semester jury of classical repertoire at the end of their program of applied study at the MUS 110 level. Additionally, students must pass a jury of jazz repertoire throughout their program of study at the MUS 110W, 210W, 310W, and 410W levels. Applied study in MUS 110W, 210W, 310W, and 410W for the B.A. in music with a jazz option is limited to the following instruments: saxophone, trumpet, trombone, piano, bass, guitar, and drum set. **B:** Two semesters of major ensembles (2). Major ensembles include MUS 291, 292, 293, 394, 395, 396, 397, 398G, and 398J, pending audition. **C:** Three semesters of MUS 391 (3) and two semesters of MUS 396 or 398J (2). A successful audition is required prior to participation in jazz ensembles. MUS 391 would be acceptable if the student does not achieve the audition standards required for MUS 396 or 398J. **D:** MUS 350 with emphasis on jazz styles (0). **E:** Seven semesters of Music 300 (0). Electives: The department suggests that 12 credit hours of electives be taken with a minimum of six in upper division music courses. Students who are deficient in keyboard skills must take MUS 171 (1) and 172 (1). MUS 171 and 172 may count as two of the twelve recommended music electives.

A total of 127 credits is required for graduation. At least 42 of these credits must be in courses at the 300 level or above.

**Music.** Students selecting this option must complete 36 credits (maximum 51) in musicianship, performance, and music electives, as follows: *Musicianship:* MUS 119 (1); 120, 121, 122, 225, 226, 227, 228 (14); 221, 222 (6); 322 or upper-division music history course (3); 280 (0) and 480 [**capstone**] (1). Students who are deficient in keyboard skills must take MUS 171 (1).

**Performance:** four semesters of the principal applied music area, at least two credits per semester (8); three semesters of ensembles appropriate to the principal applied music area (3); seven semesters of MUS 300 (0). A successful audition is required prior to study in the principal applied music area. **Electives:** the department strongly recommends that 12 credit hours of electives be taken in music. At least six of these credits should be in upper-division music courses.

A total of 120 credits is required for graduation. At least 42 of these must be at the 300 level or above.

**Music History and Literature.** Students choosing this option must complete 43 credits (maximum 55) in musicianship, performance, and music electives, as follows: **Musicianship:** MUS 119 (1); 120, 121, 122, 225, 226, 227, 228 (14); 221, 222, 322 (9); three upper-division music history courses (9); 280 (0) and 480 [**capstone**] (1). Students who are deficient in keyboard skills must take MUS 171 (1). **Performance:** four semesters of the principal applied music area, at one credit for two semesters and two credits for two semesters (6); three semesters of ensembles appropriate to the principal applied music area (3); seven semesters of MUS 300 (0). A successful audition is required prior to study in the principal applied music area. **Electives:** the department strongly recommends that 12 credit hours of electives be taken in music. At least six of these credits should be in upper-division music courses. **Other:** nine credits of foreign language and proficiency through 103 in either French or German.

A total of 126 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF MUSIC

Students can be admitted to the B.M. degree program only after a successful audition in the principal applied music area and should contact the Department of Music for specific requirements. Transfer credits in music theory, music history, and performance must be validated by placement examination.

All Bachelor of Music students must successfully complete Option I or Option II of the piano proficiency examination of the piano proficiency requirement. In Option I, students must pass all seven piano proficiencies by the end of their junior year. Piano proficiency examinations before the faculty examination committee are scheduled on a regular basis during the fall and spring semesters. In Option II students take MUS 171, 172, 271, and 272 and successfully pass each course with a grade no lower than a C. Failure to pass either option will require re-examination in succeeding semesters. The B.M. degree will not be granted until this requirement is fulfilled.

Students selecting Option I will need to demonstrate the following seven piano proficiencies: 1) *nomenclature*, answering questions which deal with nomenclature concerning the piano as well as nomenclature which may concern tempo, dynamics, and/or other musical elements; 2) *scales*, performing all major scales two octaves, hands together, by memory at a tempo of M.M.=144 per note; 3) *harmonizing at sight*, by reading two melodies taken from any major or minor key chosen by the examination committee, improvising suitable accompaniments for the melodies by using diatonic triads and secondary dominants, and reading from chord symbols; 4) *transposition*, by transposing at sight two melodies selected by the examination committee; students will be asked to transpose the melodies either a half step or whole step up or a half step or whole step down; 5) *patriotic songs*, by playing *America* and *The Star-Spangled Banner* in a manner suitable for accompanying community or school singing; these accompaniments are to be prepared in advance; 6) *sight-read accompaniments*, by playing at sight a four-part song and an accompaniment for a vocal or instrumental soloist; and 7) *repertoire*, by playing two prepared piano pieces by contrasting composers; each piece must be approved in advance by a member of the piano faculty or an instructor of class piano.

No student should participate in more than three major ensembles in a single semester.

In addition, students select one of the following majors.

**Music Composition.** Students selecting music composition must complete seven semesters of applied composition (110V, 210V, 310V, 410V), one or two credits per semester (10); seven semesters of the principal applied music area, two credits per semester (14); seven semesters of MUS 300 (0); and four semesters of secondary applied music areas, one credit per semester (4); MUS 171 and 172 are required as secondary applied music areas. Students may meet the requirement of MUS 172 by passing the piano proficiency exam before accumulating 60 credits. Also required are six semesters of major ensembles appropriate to the principal applied music area (6); MUS 119 (1), 120, 121, 122, 225, 226, 227, 228, 416 (17); 221, 222, 322 (9); 235 (3) and 311 (2); 417, 420, and 421 (9) (for students wishing to specialize in studio composition, three credits of MUS 434 may be substituted for MUS 420); an upper-division music history course (3); MUS 450 Senior Composition Recital [**capstone**] (0); MUS 280 (0) and 480 [**capstone**] (2); and nine credits of free electives, at least three of which are in upper-division music courses.

A total of 128 credits is required for graduation.

**Music Education.** See pages 41 and 106 for admission requirements for teacher education programs. Students majoring in music education must complete 86 credits in *Studies in Music and Professional Education*, as follows:

**Studies in Music** (65 credits): seven semesters of the principal applied music area, two credits per semester (14). Seven semesters of MUS 300 (0); senior recital MUS 450 [**capstone**] (0). Four semesters of secondary applied music areas, one credit per semester (4); MUS 171 and 172 are required as secondary applied music areas. Students may meet the requirement of MUS 172 by passing the piano proficiency exam before

accumulating 60 credits. Seven semesters of major ensembles appropriate to the principal applied music area, at 0–1 credit per semester (6). MUS 119 (1); 120, 121, 122, 225, 226, 227, 228 (14); 416 or 417 (3); 221, 222, 322 (9). MUS 169, 170, 173, 175, 177, 179 at a minimum of one credit each (6); 235 (3); 311, 312 (5).

*Professional Education* (21 credits): MUS 280 (0), 480 [**capstone**] (2); MUS 238, 339, 340 (9); EDC 250 (1), 484 (12). PSY 113 (3) is required as a *Professional Education* course but also counts toward the Social Science requirement in the Basic Liberal Studies program. The piano proficiency examination Options I or II and all courses required in the degree program, with the exception of MUS 480 [**capstone**], must be completed before supervised student teaching (EDC 484).

*Free electives*: three credits. EDC 312 is recommended as an elective.

A total of 131 credits is required for graduation.

**Music Performance.** All students in this degree program must take the following music courses: eight semesters of MUS 300 (0); MUS 350 (0) and 450 [**capstone**] (0); MUS 119 (1); 120, 121, 122, 225, 226, 227, 228, 416 (17); 221, 222, 322 (9). MUS 235 (3) and 442 (2); 311 (2); 280 (0); 480 [**capstone**] (2).

A total of 128 credits is required for graduation. In addition, students must select one of the following four options.

**Classical Guitar:** eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits in the first semester and three credits in the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). MUS 171 and 172 (2). Students may meet the requirement of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Four semesters of major ensembles (4). Four semesters of guitar ensemble (MUS 398) and three semesters of playing guitar in chamber music ensembles (MUS 398) (7). An upper-division music history course (3);

an upper-division music theory course (3). Seven credits of free electives, at least three of which should be in upper-division music courses.

**Orchestral Instrument:** eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits in the first semester and three credits in the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). MUS 171 and 172 (2). Students may meet the requirement of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Eight semesters of major ensembles appropriate to the principal applied music area (8). Three semesters of secondary or chamber music ensembles (3). An upper-division music history course (3); an upper-division music theory course (3). Seven credits of free electives, at least three of which should be in upper-division music courses.

**Piano or Organ:** eight semesters of the principal applied music area. Two semesters of MUS 110 and 210 at three credits each (12); two semesters of 310 and 410 at four credits each (16). Four semesters of major ensembles (4). Six semesters of piano accompanying (MUS 371) or playing piano in chamber music ensembles (MUS 398) (6). MUS 420 (3). An upper-division music history course (3). Nine credits of free electives, at least six of which should be in upper-division music courses.

**Voice:** eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits in the first semester and three credits in the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). MUS 171, 172, 271, and 272 (4). Eight semesters of major ensembles appropriate to the principal applied music area at zero or one credit per semester (7). Two semesters of chamber or other music ensembles (2). MUS 283 (3). Seven credits of free electives, at least three of which should be in upper-division music courses.

Students selecting voice must also take nine credits of foreign language in any

two or more languages. This requirement may be modified or satisfied by advanced placement.

## MINORS IN MUSIC

**Jazz Studies.** Students who wish to declare a minor in music using the jazz studies option must complete 19 credits in musicianship, performance, and electives as follows: Musicianship: MUS 106 (3), 120 (2), 121 (2), 122 (2), 171 (1), 221 (World Music Unit) (1), 322 (Jazz and Popular Music Units) (2), and MUS 300 for a minimum of two semesters (0). Music Performance: Four semesters of principal applied music in jazz (MUS 110W, 210W, 310W, or 410W) at 1 credit per semester (4); two semesters of MUS 391, 396, or 398J (2). Applied study in MUS 110W, 210W, 310W, or 410W for the minor in jazz option is limited to the following instruments: saxophone, trumpet, trombone, piano, bass, guitar, and drum set. MUS 391 would be acceptable if the student does not achieve the audition standards for MUS 396 or 398J. Electives: The department strongly suggests that 3 credits be taken in MUS 101. Participation in other major ensembles is also encouraged. Major ensembles include MUS 291, 292, 293, 394, 395, 396, 397, 398G, and 398J, pending audition. A successful audition is required prior to study in the principal applied music area and prior to participation in ensembles.

**Music.** This option gives students a broad-based background in music. Course work in this option is similar to that taken by students starting work toward a B.A. or B.M. degree in music. Students who wish to declare a minor in music using the music minor option must earn credit for MUS 111 (3) or 120 (2); 171 (1), 121 and 122 (4), 300 for a minimum of two semesters (0), and two 3-credit music history and literature courses selected from MUS 221, 322, 408, 430, 431, 433, 434 (or 222, if the student has the additional pre-requisites) (6). Additionally, students must earn a minimum of four credits in their principal applied music area (MUS 110–410, at one or two credits per semester) and four credits

in major ensembles\* appropriate to the principal applied music area (8). The total number of credits required for this option is 21–22. Students must pass an audition in their principal applied music area prior to registration for applied study in voice or on an instrument.

**Music Performance.** This option gives students the opportunity for a more concentrated study in voice or on an instrument. Students who wish to declare a minor in music using the music performance minor option must earn credit for MUS 111 (3) or 120 (2); MUS 121 and 122 or a music history course selected from MUS 101, 106, 221, 322, 408, 430, 431, 433, 434 (3–4); MUS 300 for a minimum of two semesters (0). Additionally, students must earn a minimum of eight credits in their principal applied music area (MUS 110–410 at one or two credits per semester) and six credits in major ensembles\* appropriate to the principal applied music area (14). The total number of credits required for this option is 19–21. Students must pass an audition in their principal applied music area prior to registration for applied study in voice or on an instrument.

**Individual Music.** This option gives students more flexibility. These students design and develop their music minor program under the advisement and sponsorship of a full-time music faculty member. Petitions outlining and justifying the desired music minor program must be presented by the faculty sponsor to the music faculty for approval. A minimum of 18 credits is required. Petitions should be submitted as early as possible in a student's undergraduate program.

\*Music ensembles include MUS 291, 292, 293, 394, 395, 396, and 397. Up to one semester of MUS 291 can count toward the major ensemble requirement in the music minor option; up to two semesters of MUS 291 can count toward the major ensemble requirement in the music performance option. Those with a major applied area in guitar can count MUS 398 for guitar ensemble as a major ensemble. Those with a major applied area in piano can

count additional applied music credits (MUS 110–410) and/or accompanying (MUS 371) in lieu of the major ensemble requirements.

## Philosophy

The Department of Philosophy offers a Bachelor of Arts (B.A.) degree.

**Faculty:** Professor Zeyl, *chairperson*. Professors Foster, Johnson, Pasquerella, J. Peterson, and Wenisch; Associate Professor Ariew; Assistant Professors Krieger, Meghani, and Mollgaard; Professors Emeriti Y. Kim and Schwarz.

Students selecting this major must complete no fewer than 33 credits (maximum 48) in philosophy. Students are required to take PHL 205; at least one from PHL 101, 451 (logic); at least one from PHL 212, 314 (ethics); at least one from PHL 341, 342, 452; both PHL 321 and 323; at least one from PHL 204, 318, 324, 346; and PHL 490

**[capstone].** The remaining nine credits may be chosen freely from the list of PHL courses offered by the department. At least 18 credits in course work must be at the 300 level or above. Note: PHL 499 is also a **capstone** course in this major.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Physics

The Department of Physics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

**Faculty:** Professor Northby, *chairperson*. Professors Heskett, Kahn, Kaufman, Malik, Meyerovich, Muller, Nightingale, Nunes, and Steyerl; Assistant Professor Reshetnyak; Adjunct Professors Andreev, Hemenway, Kemp, and McCorkle; Adjunct Associate Professors Bozyan, Karbach, and Ruffa; Adjunct Assistant Professor Briere; Professors Emeriti Desjardins, Hartt, Letcher, Penhallow, Pickart, Stone, and J. Willis.

## BACHELOR OF ARTS

Students selecting this program must complete a minimum of 41–42 credits (maximum 45) in physics, mathematics, and computer science, including PHY 203, 204, 205, 273, 274, 275 (12), 306 (3), 322 (3), 331 (3), 381, 382 (6), 401 or 402 (1), 451 (3), 491 or 492 (3), MTH 244 (3), CSC 211 (4), and one course from PHY 410 or CSC 212 (3–4). It is strongly recommended that students take MTH 141 and 142 in the freshman year.

Students in this program are encouraged to broaden their opportunities by using the block of electives to minor in business, education, engineering, medicine and molecular biology, language, or other physics-related interdisciplinary areas as listed under the B.S. program.

A total of 120 credits is required for the B.A. At least 42 of these must be in courses numbered 300 or above.

For students completing both the B.A. in physics and the B.S. in electrical engineering at the same time, the requirements of CSC 211, PHY 331, and PHY 410 for the physics majors are waived.

For students completing both the B.A. in physics and the B.S. in mechanical engineering at the same time, the requirements of CSC 211 and PHY 410 for the physics majors are waived.

Students in both of the above groups (B.A. physics/B.S. electrical engineering and B.A. physics/B.S. mechanical engineering completing both degrees at the same time) may use one course in physics toward fulfilling the Natural Sciences Basic Liberal Studies requirement.

## BACHELOR OF SCIENCE

This curriculum provides a general background in both theoretical and experimental physics. It forms a foundation for further study at the graduate level toward an advanced degree, and also prepares the student for a career as a professional physicist in industry or government. Initiative, independent solution of laboratory problems, and research are encouraged in the advanced laboratory courses.

In addition to the major, students are encouraged to use the large block of elective credits to develop a program of study as a minor (described on page 35) in applied or interdisciplinary fields, such as acoustics, geophysics, optics, energy, astronomy/astrophysics, atmospheric science, computational physics, mathematical physics, physics education, chemical physics, ocean physics, engineering physics, business, education, medicine and molecular biology, and languages. As with any minor, it will be recorded on the student's final transcript.

The following courses are required for the B.S., but exceptions and/or substitutions are possible and can be arranged by consulting the department chairperson.

A total of 129 credits is required for graduation. PHY 483 and 484 are the **capstone** courses in this program.

#### *Freshman Year*

*First semester: 17 credits*

MTH 141 (4); PHY 203, 273 (4), Basic Liberal Studies requirements and electives (9).

*Second semester: 16 credits*

MTH 142 (4); PHY 204, 274 (4), Basic Liberal Studies requirements and electives (8).

#### *Sophomore Year*

*First semester: 17 credits*

CSC 211 (4); MTH 243 (3); PHY 205, 275 (4), Basic Liberal Studies requirements and electives (6).

*Second semester: 17 credits*

MTH 244 (3); PHY 306 (3), 410 (3), Basic Liberal Studies requirements and electives (8).

#### *Junior Year*

*First semester: 17 credits*

PHY 322 (3), 381 (3); MTH 215 (3), Basic Liberal Studies requirements and electives (8).

*Second semester: 17 credits*

Mathematics elective at the 300 or 400 level (3), PHY 331 (3), 382 (3), Basic Liberal Studies requirements and free electives (8).

#### *Senior Year*

*First semester: 13 credits*

PHY 401 (1), 420 (3), 451 (3), 483 [**capstone**] (3), Basic Liberal Studies requirements and free electives (3).

*Second semester: 15 credits*

PHY 452 (3), 455 (3), 484 [**capstone**] (3), 510 (3), Basic Liberal Studies requirements and electives (3).

## Physics and Physical Oceanography

The Department of Physics and the Graduate School of Oceanography offer a Bachelor of Science (B.S.) degree in physics and physical oceanography.

*Coordinators:* Professors Heskett and Muller (Physics). The faculty consists of the members of the Department of Physics and the GSO's physical oceanography faculty.

This program includes a comprehensive background in physics and a solid introduction to physical oceanography. The curriculum includes a full set of physics and mathematics courses required for a B.S. in physics, with extra emphasis on classical physics, plus additional upper-division or graduate-level courses in fluid dynamics and physical oceanography.

The senior physics research project (PHY 483 and 484) will be undertaken in the Graduate School of Oceanography under the supervision of a GSO faculty member. In addition, students may find summer employment or participate in oceanographic research cruises after their junior year.

Students graduating in this course of study are well prepared to pursue careers in conventional physics or physical oceanography. Technical positions in private or government oceanographic research laboratories are available for physical oceanographers at the B.S. level. Students who continue on to graduate studies should expect to find high demand for physical oceanographers with advanced degrees. It is recommended that students planning to attend an oceanography graduate school take PHY 520 (Classical Dynamics); students

wishing to keep open the option of physics at the graduate level should take PHY 452 (Quantum Mechanics). Students entering the URI Graduate School of Oceanography from this program will have a significant head start compared to those entering from most other undergraduate institutions.

A total of 129 credits is required for graduation.

#### *Freshman Year*

*First semester: 17 credits*

MTH 141 (4); OCG 110 (3); PHY 203, 273 (4), Basic Liberal Studies requirements and electives (6).

*Second semester: 16 credits*

CHM 101, 102 (4); MTH 142 (4); OCG 123 (4); PHY 204, 274 (4).

#### *Sophomore Year*

*First semester: 17 credits*

CSC 211 (4); MTH 243 (3); PHY 205, 275 (4), Basic Liberal Studies requirements and electives (6).

*Second semester: 17 credits*

MTH 244 (3); PHY 306 (3), 410 (3), Basic Liberal Studies requirements and electives (8).

#### *Junior Year*

*First semester: 17 credits*

PHY 322 (3), 381 (3); MTH 215 (3), Basic Liberal Studies requirements and electives (8).

*Second semester: 17 credits*

MCE 354 (3); PHY 331 (3), 382 (3), Basic Liberal Studies requirements and electives (8).

#### *Senior Year*

*First semester: 16 credits*

OCG 501 (3); PHY 401 (1), 420 (3), 451 (3), 483 (3), Basic Liberal Studies requirements and electives (3).

*Second semester: 12 credits*

OCG 510 (3); PHY 425 (3), 484 (3), and 510 (3).

## Political Science

The Department of Political Science offers the Bachelor of Arts (B.A.) degree. The department also offers the Master of Arts (M.A.) in political science and the Master of Public Administration (M.P.A.).

*Faculty:* Professor Tyler, *chairperson*.

Professors Hamilton, Hennessey, Killilea, Moakley, Petro, Rothstein, and Zucker; Associate Professor Krueger; Assistant Professors Hutchison and Johnson; Professors Emeriti Leduc, Milburn, Stein, and Wood.

Students selecting this field must complete a minimum of 30 credits (maximum 45) in political science, including PSC 113 (3) and 116 (3). The remaining 24 credits will reflect the student's emphasis, though at least one course must be selected in each of the following: American politics, world politics, and political theory.

Students completing both the B.A. degree in political science and the B.S. degree in engineering at the same time may use courses in the political science major to satisfy Basic Liberal Studies requirements for the Bachelor of Arts. The College of Engineering and the Department of Political Science have established a curriculum that allows for the completion of the two degrees and a public-sector internship in five years.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

**Minor in International Relations.** See page 37.

**John Hazen White Sr. Center for Ethics and Public Service.** An important part of URI's Political Science Department, this center was established in 1994 through a grant from John Hazen White Sr., a local businessman and philanthropist. The center offers ethics and public service programs for undergraduate and graduate students, elected and appointed officials, public managers, and citizen groups. In addition to research opportunities, workshops, and special programs, the center also sponsors the Mentor/Tutor Internship (MTI), which

provides URI students internships, for credit, in local public schools to encourage and mentor students at risk of dropping out. See Professor Alfred Killilea for more information.

## Portuguese

The Department of Modern and Classical Languages and Literatures offers a number of undergraduate courses in Portuguese.

## Psychology

The Department of Psychology offers the Bachelor of Arts (B.A.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

*Faculty:* Professor Stevenson, *chairperson*. Professors Berman, Biller, Brady, J.L. Cohen, Collyer, de Mesquita, Faust, Florin, Gorman, Harlow, LaForge, Morokoff, Prochaska, Quina, Rossi, Velicer, Willis, and Wood; Associate Professors Boatright-Horowitz, S. Harris, Park, and Rogers; Assistant Professors Flannery-Schroeder, Robbins, L. Stein, Walls, and Weyandt; Professors Emeriti Grebstain, Gross, A. Lott, B. Lott, Merenda, Silverstein, N. Smith, Valentino, Vosburgh, and Wloughby.

In order to transfer from University College to Arts and Sciences as a psychology major (or to be coded as such in the College of Arts and Sciences), a student must have a C or better in *each* of the following three courses: PSY 113; PSY 300; and PSY 232, 235 or 254.

Psychology majors are required to complete a minimum of 31 (maximum 46) credits in psychology courses to be distributed as follows: PSY 113 (with a grade of C or better); a minimum of two courses from PSY 232, 235, and 254 (with a C average); both PSY 300 and PSY 301 (with a grade of C or better in each); a minimum of three topics courses (9 credits) from PSY 255, 310, 335, 361, 381, 384, 385, 388, 399, 432, 434, 436, 442, 460, 464, 470, 479, and 480 (the average in the three courses

must be C or better); a minimum of one course (3 credits) in the applied knowledge area to be selected from PSY 103, 261, 275, 334, 465, 466, 471, and 478 (with a C or better); a minimum of one course (three credits) from the experiential practice and/or internships area selected from PSY 305, 371, 473, 489, and 499 (with a C or better); and additional courses from the enrichment group for a minimum total of 31 credits (PSY 499 does not count toward the first 31 credits in the psychology major). Majors may take up to 46 credits in psychology.

Students who must repeat a course to meet the minimum grade requirement may use only three credits of that particular course toward graduation.

Students majoring in psychology typically go on either to pursue a career at the B.A. level or study for an advanced degree. In both cases, students should consult the department's Web site ([uri.edu/artsci/psy](http://uri.edu/artsci/psy)) and their academic advisor to select appropriate courses for their interests and goals.

A total of 120 credits is required for graduation. At least 42 of these credits must be in courses numbered 300 or above.

## Public Relations

The Departments of Communication Studies and Journalism offer the Bachelor of Arts (B.A.) degree in public relations.

*Coordinator:* Barbara Luebke, Journalism.

This interdepartmental major combines a liberal arts education with the skills important to a career in public relations. Working with an advisor from Communications Studies or Journalism, students will develop a specific program of studies.

Students must complete the following courses before being accepted into the major: COM 202, 210; JOR 220 (with a C or better); MTH 107 or STA 220. Note: COM 210 and MTH 107 or STA 220 may be used toward fulfilling requirements in the Basic Liberal Studies Program in English Communication, Letters, and Mathematics, respectively. Based on grade point average,

only the top 25 applicants will be admitted annually. The major requires a minimum GPA of 2.0 overall and 2.5 in the pre-major courses. Apply in February.

The major requires 33 credits including PRS 340, 441, 491; COM 381; JOR 341 (15). Students must complete six courses (18 credits) from the following including at least one course from each category—*Category A*: JOR 321, WRT 302, 333; *Category B*: BUS 365, 465; *Category C*: COM 302, 351, 415, 450; *Category D*: COM 415; JOR 342, 410; PSY 335.

A total of 121 credits is required for graduation. At least 42 of these must be at the 300 level or above.

A minor is also available (see page 39).

## Russian

Admission to the Bachelor of Arts (B.A.) program in Russian is currently suspended.

*Faculty:* Professor Aronian, *section head*.

## Sociology

The Department of Sociology and Anthropology offers the Bachelor of Arts (B.A.) degree and the Bachelor of Science (B.S.) degree in sociology.

*Faculty:* Professor Loy, *chairperson*. Professors Albert, Carroll, Mederer, Peters, and Travissano; Associate Professors Costello, Cunnigen, and Van Wyk; Professor Emerita Reilly.

## BACHELOR OF ARTS

Students selecting this curriculum must complete a minimum of 30 credits (maximum 45) in sociology, including SOC 100, 301, 401, 495 [**capstone**], and two courses selected from SOC 240, 242, 336, 413, 428, and 452. At least 18 of the 30 credits must be at the 300 level or above. No more than six credits in independent study and/or field experience courses may be used toward the 30 credits required for the major. SOC 495 is to be taken during the senior year. (See page 52 for a description of the anthropology major.)

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## BACHELOR OF SCIENCE IN SOCIOLOGY

Students in this curriculum elect either the Criminology and Criminal Justice option or the Organizational Analysis option and must notify the dean's office of the chosen option.

SOC 476 is the **capstone** course for the Criminology and Criminal Justice option. SOC 495 is the **capstone** course for the Organizational Analysis option.

**Criminology and Criminal Justice Option.** A minimum of 36 credits in sociology is required including SOC 100, 230, 274, 301, 370, and 476 (18); two courses selected from SOC 240, 242, 336, 413, 428, and 452 (6); and four courses selected from SOC 330, 331, 420, and 497. When appropriate, and by permission of the department chairperson, students may substitute SOC 300, *Topics in Sociology*, or SOC 498 or 499, *Independent Study*, for one of the four elective courses listed above. No more than six credits in independent study and/or field experience may be used toward the 36 credits required for the major. In addition to the required courses, students selecting this option are strongly encouraged to take PSC 288 and PSC 472.

Admission to this option is selective. Applications for admission will be reviewed twice each year, usually on or about October 1 and March 1. Students must apply by the end of September or February by submitting their names to the University College advisor for sociology or to the chairperson of the Department of Sociology and Anthropology. To be considered for the Criminology and Criminal Justice option, students must have earned a minimum of 30 credits, including SOC 100, 230, and 274 by the application deadline, and must have earned an overall GPA of at least 2.50. Preference for admission will be given to those individuals with the highest grade point averages.

A total of 126 credits is required for graduation.

**Organizational Analysis Option.** A minimum of 30 credits in sociology is required including SOC 100, 301, 320, 350, 401, 495 (12); and six credits in sociology at the 300 level or above. No more than six credits in independent study and/or field experience courses may be used toward the 30 credits required for the major. In addition, students selecting this option must complete ECN 201 and 202 (6); MTH 111 (3); STA 308 and 412\* (6); CSC 201\* (4); WRT 333 (3); BUS 340, 341, 343, 345, 442, and either BUS 315 or BUS 443 or BUS 448 (18).

\*Note: BUS 210 and 212 may be substituted for STA 308 and 412; and BUS 110 may be substituted for CSC 201 if these courses are already completed when the student transfers into the B.S. program.

Admission to this option is open to only 15 students per graduating class. Applications for admission will be reviewed only once each year, usually on or about March 1. Students must apply by the end of February by submitting their names to the University College advisor for sociology or to the chairperson of the Department of Sociology and Anthropology. To be considered for the organizational analysis option, students must have earned a minimum of 45 credits by the application deadline and must have at least a 2.00 grade point average. Preference for admission will be given to those individuals with the highest grade point averages.

A total of 126 credits is required for graduation.

## Spanish

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in Spanish. The department also offers the Master of Arts (M.A.) program in Spanish.

*Faculty:* Professor Gitlitz, *section head*. Professors Manteiga, Morín, Trubiano, and White; Associate Professor de los Heros; Assistant Professor Echevarria.

For the Spanish major, students will complete a minimum of 30 credits (maximum 45), including SPA 325 and three 400-level courses (excluding SPA 421). SPA 421 may be used as part of the remaining 18 required credits. Note: SPA 101, 102, 316, 317, 321, 391, 392, and 393 cannot be counted toward the Spanish major. Students may also include LIN 202 and 220, and—with permission of the advisor, section head, department chairperson, and dean—up to two courses in allied fields such as history, art, and anthropology. These requirements are the same for the secondary education major.

A summer field workshop (SPA 310) in Spain or Spanish America is occasionally offered for three to six credits. For information, see the section head.

Students in the International Engineering Program must take SPA 312, 316, 317, 321, 325, and a 400-level engineering course taught in Spanish. IEP students beginning their study of Spanish at the 200 level or higher may opt to take up to six credits of Portuguese toward the completion of the major in Spanish. IEP students do not have to take three 400-level courses in Spanish, but must take at least one 400-level literature course in Spanish. Note: SPA 101, 102, 391, 392, and 393 cannot be counted toward the major for IEP students. The 6-credit Portuguese option is available to IEP students only. Students simultaneously completing the Spanish International Engineering Program and the B.A. with a major in Spanish may also use three credits of Spanish literature toward the Fine Arts and Literature Basic Liberal Studies requirement. In addition, students in this program are exempt from the one-course-per-discipline rule in Letters, Social Sciences, and Natural Sciences.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

## Statistical Science

Admission to the B.S. program in statistical science is currently suspended.

**Minor in Statistics.** Students who wish to declare a minor in statistics must earn credit for STA 409 (3), 412 (3), MTH 451 (3), and three three-credit statistics courses chosen with prior approval of the chairperson of the Department of Computer Science and Statistics.

## Theatre

The Department of Theatre offers a Bachelor of Fine Arts (B.F.A.) degree.

**Faculty:** Associate Professor McGlasson, *chairperson*; Professor J. Swift; Associate Professor Wittwer; Assistant Professors Howard and Wortman; Lecturer Hawkridge.

Productions at URI cover the range of theatre forms, ancient to modern, with an emphasis on contemporary and experimental work. All members of the University community may participate in productions.

### BACHELOR OF ARTS

Enrollment in this program is currently suspended with the exception of students enrolled in the elementary education program. Elementary education students who do not complete the elementary education program must switch to the B.F.A. program in order to earn a degree in theatre.

Students must fulfill the elementary education requirements as well as a total of 33 credits (maximum 48) as follows: THE 111 (3), 112 (3), 161 (3), 181 (3), 221 (3), 250 (3), 261 (3), 321 (3), 381 and 382 (6), 383 or 384 or 481 (3). Potential B.A. candidates are urged to complete THE 111, 112, 161, and 181 by the end of their freshman year. B.A. candidates may elect up to 15 more credits in theatre with the approval of their department advisor.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

### BACHELOR OF FINE ARTS

The B.F.A. program is intended for highly motivated students who wish their education to emphasize a major theatrical field of interest. The program offers

concentrated study in acting, design and theatre technology, directing, and stage management. Specific requirements of these areas are flexible to suit students' individual needs.

All B.F.A. students are required to complete 37 credits in core courses distributed as follows: THE 111 (3), 161 (3), 181 (3), 221 (3), 250 (3), 261 (3), 291 (2), 321 (3), 351 or 352 (3); three courses from 381 (3), 382 (3), 383 or 384 or 481 (3) to total nine credits; and 391 (2). All B.F.A. candidates are urged to select a course from ENG 362, 366, 446, or 472, and to complete THE 111, 161, and 181 by the end of their freshman year.

In addition to the core requirements, each student selects one of the following specializations. Students must notify the office of the dean of the area of specialization they have selected. B.F.A. students selected for an internship program may substitute up to 12 credits for theatre courses in their area of specialization, subject to departmental approval. Transfer students, late entries into the theatre major, and others wishing to modify this schedule of B.F.A. requirements may do so in consultation with their faculty advisor and with permission of the department chairperson.

**Acting.** These students must complete an additional 40 credits: THE 112 (3), 211 and 212 (6), 213 and 214 (2), 300 or 301 (3), 311 and 312 (6), 313 and 314 (2), 350 (1), 400 or 401 (3), 411 and 412 (6), 417 and 418 (2). Select six credits from THE 217, 227, and 413. Recommended electives include courses in related fields such as anthropology, art, communication studies, history, literature, music, psychology, and sociology.

A total of 120 credits is required for this specialization.

**Design and Theatre Technology.** Students selecting design and theatre technology must complete an additional 31 credits: THE 300 (3), 301 (3), 351 or 352 (3) to complete the sequence begun in the core curriculum; 350 (1), 355 (3), 365 (3), 371 (3); and 12 credits selected from 362 (3), 400 (3), 401 (3), 415 (12), 451 (3), 455 (3),

463 (3), 465 (3), 475 (3). Recommended electives include ARH 251, 252, ART 207, and courses in related fields.

A total of 120 credits is required for this specialization.

**Directing.** Students selecting directing must complete an additional 35 credits: THE 300 or 301 (3), 322 (3), 331 (3), 341 (3), 355 or 365 or 371 (3), 400 or 401 (3), 413 (3), and 420 (3). They must also complete a three-semester sequence in acting: 112 (3), 211 (3), 213 (1), 212 (3), and 214 (1), to total eleven (11).

Recommended electives include courses in anthropology, art history, history, literature, music, psychology, and sociology.

A total of 120 credits is required for this specialization.

**Stage Management.** Students selecting stage management must complete an additional 30 credits: COM 320 (3); management course (to be approved by chair) (3); THE 300 (3), 301 (3), 341 (3), 355 or 365 (3), 371 (3), 400 (3), 401 (3), 441 (3).

A total of 120 credits is required for this specialization.

## Women's Studies

The aim of this interdepartmental program is to provide an option for students who are interested in the interdisciplinary study of the culture and experiences of women.

**Faculty:** Professor K. Stein, *director*.

Professors Albert, Aronian, Beauvais, Brownell, Cappello, J. Campbell, Donnelly, Dvorak, Grubman-Black, C. Hamilton, Hughes, Ketrow, Livingston, Luebke, Mederer, J. Miller, Pasquerella, Quina, Reynolds, Roworth, Starkey, Strom, and Walton; Associate Professors Danis, Derbyshire, Eaton, de los Heros, Karno, Kirchner, Pegueros, Rollo-Koster, Rusnock, Sama, and Schwartz; Assistant Professor Torrens; Lecturer Lisberger; Adjunct Professors Barker, Brennan, Evans, Hagen, Milhaven, Pisa, and Wild.

**The Major.** This program leads to a Bachelor of Arts (B.A.) degree in women's studies.

The program requires 30 credits for a major. Five required courses are WMS 150, 300, 310 or 320, 315, and 400. Five courses needed to complete the concentration may be selected from: AAF 290; APG 310; ARH 285; COM 345; CSV 303; ECN 386; ENG 260, 317, 385; HDF 230, 298, 430, 432, 433, 437, 505, 559; HIS 118, 145, 146, 308, 350, 351, 352, 355, 376, 391; BUS 346; NUR 150, 459; PEX 375, 555; PHL 210; PSC 441; PSY 430, 466, 480; SOC 212, 242, 413, 420, 430; TMD 224; WMS 220, 301, 305, 306, 317, 325, 350, 351, 360, 365, 370 (pending approval), 450, 490, and 500. In addition to this list, there are special courses offered by various departments each year that may be selected with prior approval of the Women's Studies Advisory Committee, and some additional preapproved topics courses not offered on a regular basis. Students must file a program of study with the dean's office. The Women's Studies Advisory Committee also strongly recommends that majors take an additional 18 credits in a specialized area as a minor.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

**The Minor.** Students who declare a minor in women's studies are required to complete 18 credits including WMS 150 and WMS 315, and three credits from any other WMS course. The remaining nine credits may be selected from any WMS course or from the following: AAF 290, 300C; ARH 285; BUS 346; COM 310S; ECN 386; ENG 260, 385; HDF 230, 298, 430, 432, 433, 437, 505, 559; HIS 118, 146, 308, 352, 391; KIN 375; NUR 150, 459; PHL 210; PSY 430, 466, 480; SOC 212, 242, 413, 420, 430; TMD 224. There may be additional courses offered by various departments each year that may be selected with prior approval of the Women's Studies Advisory Committee.

## Writing and Rhetoric

The College Writing Program offers the Bachelor of Arts (B.A.) degree.

**Faculty:** Professor N. Reynolds, *director*. Professors Schwegler and Shamoon; Associate Professors C. Martin, Miles, and Vaughn; Assistant Professors Dyehouse and Pennell.

**The Major.** This program is designed for undergraduate students who seek a career in professional writing, teaching, or publishing. Graduates will have a strong foundation in rhetorical theory and composing strategies as well as familiarity with various writing technologies, and they will leave URI with an electronic portfolio that will demonstrate their ability to design and write a number of different documents, targeted to different audiences and purposes.

Writing and rhetoric majors must complete 30 credits (maximum 51), including WRT 201, 235, 360, 490, and 495. At least 15 credits for the major must be completed from writing courses numbered 300 or above. A maximum of 6 credits for the major may be taken in online courses or through distance learning. Writing and rhetoric majors are strongly encouraged to complete a practicum experience, either the internship or fieldwork course. Undergraduates wishing to take 500-level courses must secure the instructor's permission.

A total of 120 credit hours is required for graduation. At least 42 of these credits must be in courses numbered 300 or above.

**The Minor.** Students who declare a minor in writing must complete 18 credits from among two clusters of courses: three courses from WRT 201, 235; ENG 205A, 205B, 205C (students who major in business may include WRT 227 among this first cluster of courses), and three courses from WRT 302, 303, 304, 305, 306, 333, 353; ENG 305, 330.

## COLLEGE OF BUSINESS ADMINISTRATION

Mark Higgins, Dean  
 Shaw K. Chen, Associate Dean  
 Deborah Rosen, Associate Dean  
 Peg Ferguson Boyd, Assistant Dean

Faculty: Professors Beauvais, Beckman, Budnick, S. Chen, Comerford, Cooper, Dash, Della Bitta, N. Dholakia, R. Dholakia, Hazera, Hickox, Higgins, Jarrett, Mangiameli, S. Martin, Matoney, Mazze, Narasimhan, Overton, D. Rosen, Scholl, Schwarzbach, and Westin; Associate Professors Boyle, Creed, Dugal, Dunn, Graham, Y. Lee, Lin, Lloyd, Oppenheimer, Sheinin, and Yu; Assistant Professors Dadult, Dorado-Banaclanche, Hales, Hamilton, Jelinek, Leonard, McCray, and Shin.

The seven majors in the College of Business Administration allow students to develop competence in special fields of interest and prepare them to meet the changing complexities of life and leadership in the business community. Majors are offered in accounting, entrepreneurship management, finance, general business administration, international business, marketing, and supply chain management.

Basic courses required of all undergraduates at the University introduce the student to the humanities, social sciences, physical and biological sciences, letters, foreign language, and the arts. The business curriculums develop the student's professional capabilities through a broad group of business courses with specialization in one area of study. Business programs provide a strong foundation in accounting, finance, marketing, organization and management theory, supply chain management, and statistics. The college emphasizes behavioral studies and computer technology to meet the needs of the business community and society as a whole. Emphasis is placed on the total business environment, as a part of the national and world economic structure. Theory, analysis, and decision-making are stressed in all areas of learning.

The College of Business Administration is a professional school with courses in lower and upper divisions. The lower-division courses constitute those taught in the freshman and sophomore years; the upper-division courses constitute those taught in the junior and senior years. Courses taken by transfer students at the lower-division level may be applied to satisfying upper-division requirements only after successful completion of a validating examination. All 500- and 600-level courses in the college are open to matriculated graduate students only.

A student enrolled in this college must complete the curriculum in one of the majors and must obtain an overall cumulative grade point average of 2.00 or and a 2.00 or better average for all required courses in the major. Students wishing permission to substitute required courses or waive other requirements may petition the college's Scholastic Standing Committee. Petition forms are available in the Office of the Dean.

### Admission Requirements

All students are initially enrolled in University College, where they complete general education and lower-business core courses. Core requirements include accounting, economics, business computing and decision-making, mathematics, and statistics. First-semester sophomores who complete a minimum of 42 credits with an overall grade point average of 2.50 or higher and who have a 3.00 or higher average in BUS 111, 201, 210, and ECN 201 will be admitted. Students not qualifying after the first semester of their sophomore year must still meet the requirements of an overall grade point average of 2.50 and a 2.70 or higher average in BUS 111, 201, 202, 210, 211, and ECN 201 and 202.

Students who have not satisfied entrance requirements may petition the Scholastic Standing Committee of the college for a waiver of those requirements during their fourth or succeeding semesters. Students in the University College business programs

who have not met entrance requirements to the College of Business Administration are permitted to enroll only in 100- and 200-level business courses and in nonbusiness courses.

To ensure that business majors have access to required courses, a strict registration policy will be followed with regard to business courses. Highest priority will be given to business students for whom a course is a program requirement, as stated in this catalog, followed by any other student in the College of Business Administration, and then students outside the College of Business Administration who specifically need the course as a requirement for their degree.

### Curriculum Requirements

The first two years are common to all majors in the college.

*Freshman Year:* 16 credits in the first semester and 15 credits in the second semester. All students must complete a behavioral science course from the following list: APG 203; PSY 103, 113; SOC 100, 204. BUS 110 and 111 are taken in alternate semesters, with the balance of credits in general education. Students majoring in international business are required to complete PSC 116. Students majoring in Accounting are required to complete PHL 212.

*Sophomore Year:* 15 credits in each semester. The BUS 201, 202, ECN 201, 202, and BUS 210, 211 sequences are begun in the first semester and completed in the second. WRT 227 may be taken in either semester. The balance of credits is made up of general education requirements and liberal electives.

**General Education.** Students are required to select and pass 39 credits of course work from the general education requirements as listed on pages 33–35. Specific requirements of the College of Business Administration in each group follow:

*Group A (6 credits).* A minimum of three credits in literature.

*Groups L (6 credits) and N (6 credits).* Any course for which prerequisites have been met.

*Group M (3 credits).* BUS 111 in the freshman year.

*Group S (6 credits).* ECN 201, 202 in the sophomore year.

*Group C (6 credits).* COM 100; WRT 104, 105, 106, 201, or 333 in the freshman year and WRT 227 in the sophomore year,

*Group F.* The language requirement can be met using either of the following options:

**Option 1.** A two-course sequence in a language previously studied for two or more years in high school through at least the 103 level in a living language or 301 in a classical language appropriate to a student's level of competence (e.g. 102 and 103). Note: Study abroad may be used to complete the second semester requirement of a foreign language only under option 1 (e.g., 102 at URI, study abroad would count as 103).

**Option 2.** A two-course sequence in a language not previously studied (or studied for less than two years in high school) through the beginning level (e.g., 101 and 102).

**Note:** Study abroad does not waive the foreign language requirement. As the above indicates, a minimum of 102 in a foreign language must be completed.

**Electives.** Liberal electives are courses offered by departments outside the College of Business Administration.

**Business Track in the Honors Program.** In cooperation with the University Honors Program, academically talented business students are able to enhance their intellectual development and strengthen their preparation by participating in the Business Track in the Honors Program.

**Minors.** College of Business Administration majors are encouraged to develop a nonbusiness minor. See page 35 for requirements and options relating to minors, along with a list of approved interdepartmental minors. Students in the College of Business

Administration choosing the third option described on page 35—"related studies from more than one department under the sponsorship of a qualified faculty member"—need the approval of the Scholastic Standing Committee.

Nonbusiness students wishing to obtain a departmental minor in the College of Business Administration should expect to take the required six courses over a period of two years. Admission is on a space-available basis only, and therefore not guaranteed. Interested students should complete an application form, available from the Office of the Dean of the College of Business Administration.

*International Business Program.* In cooperation with URI's Department of Modern and Classical Languages and Literatures, the College of Business Administration offers an opportunity for students to complete a double major and receive a B.S. in Business Administration and a B.A. in foreign language. The business requirements include a major in accounting, entrepreneurship management, finance, general business administration, international business, marketing, or supply chain management. The student also develops a language component, choosing from French, German, Italian, or Spanish. In addition, studies in international politics, European history, and courses in history and literature of the target country are included. Following the junior or senior year, students must complete a study abroad experience and a professional internship experience.

## Accounting

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in accounting. This curriculum provides the education requirements recommended by the American Institute of Certified Public Accountants for certification as a public accountant (CPA). The college also offers a Master of Science (M.S.) degree in accounting.

The increased scope of governmental and business activities has greatly extended the field of accounting and has created an unprecedented demand for accountants in both government and industry. This curriculum has been designed to meet that demand.

In addition to providing a general liberal arts and business background, the curriculum offers specialized training in the fields of general accounting, cost accounting, and public accounting. It offers specific, basic training to students who wish to become industrial accountants, cost analysts, auditors, credit analysts, controllers, income tax consultants, teachers of specialized business subjects, certified public accountants, government cost inspectors, or government auditors.

The broad scope of the courses offers fundamental training in the accounting field of the student's choice, whether this training is to be used as an aid to living or as a basis for graduate study.

### Junior Year

#### *First semester: 15 credits*

BUS 301 (3) 320 (3), 341 (3), 401 (3), and one liberal elective (3)..

#### *Second semester: 15 credits*

BUS 302 (3), 355 (3), 365 (3), 403 (3), and PSC 113, 116 or GEG 104 (3)..

### Senior Year

#### *First semester: 15 credits*

BUS 303 (3), 315 (3), 345 (3), and 404 (3), and one liberal elective (3).

#### *Second semester: 15 credits*

BUS 402 (3), 428 (3), 445 [capstone] (3), and two liberal electives (6).

**Note:** All accounting majors are required to complete a minimum of three credit hours in each of the following areas. *Ethical Foundations:* fulfilled by taking PHL 212 as a Letters general education requirement or as a liberal elective. *Political Foundations:* fulfilled by taking PSC 113, 116, or GEG 104 as a liberal elective.

## Entrepreneurship Management

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in entrepreneurship management. The curriculum is intended to provide the student with a background to tackle all aspects of a small business or entrepreneurial endeavor. The entrepreneur faces unique situations and needs a variety of skills to meet the challenges these situations present. Our program builds the skills necessary to the successful development of a business enterprise and includes courses in human resource management, marketing research, customer relationship marketing, leadership, and motivation.

With a degree in entrepreneurship, students are prepared to start and manage their own business or work for companies in an entrepreneurial role.

### Junior Year

#### First Semester: 15 credits

BUS 315 (3), 341 (3), 345 (3), 365 (3), and one liberal elective (3).

#### Second semester: 15 credits

BUS 320 (3), 342 (3), 355 (3), 367 (3), and one liberal elective (3).

### Senior Year

#### First semester: 15 credits

BUS 441 (3), 443 (3), 449 (3), 467 (3), and one liberal elective (3).

#### Second semester: 15 credits

BUS 445 [capstone] (3), 448 (3), 450 (3), and two liberal electives (6).

## Finance

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in finance. The college also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in finance and the Doctor of Philosophy (Ph.D.) degree.

A finance curriculum is designed to prepare the student to be eligible to pass the Certified Financial Analysts (CFA) Level 1 exam. This background prepares the student for managerial positions in the private, public, and nonprofit sectors. The curriculum emphasizes both financial decision-making and implementation.

Careers in finance are found in financial institutions; security analysis, portfolio, and related investment management; corporate financial management leading to positions as treasurer, controller, and other financial administrative positions; and financial administration tasks in federal and state agencies as well as in the nonprofit sector in hospitals, nursing homes, and educational institutions.

### Junior Year

#### First semester: 15 credits

BUS 301 (3), 320 (3), 365 (3), 341 (3), and one liberal elective (3).

#### Second semester: 15 credits

BUS 302 (3), 315 (3), 321 (3), 322 (3), and one liberal elective (3).

### Senior Year

#### First semester: 15 credits

BUS 345 (3), 421 (3), 424 (3), 428 (3), and one liberal elective (3).

#### Second semester: 15 credits

BUS 355 (3), 420 (3), 445 [capstone] (3), and two liberal electives (6).

## General Business Administration

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in general business administration. This curriculum offers the student an opportunity to study all phases of business operation. It is particularly suitable for: 1) those students who are planning to operate their own businesses and are seeking a broad business background; 2) those who are preparing for positions in large organizations with

training programs in which specialization is taught after employment; and 3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

A general business administration student takes a broad spectrum of courses and does not concentrate in one special field of study. The student cannot enroll in more than six (6) credits of professional electives in any area of business. All general business administration majors are strongly encouraged to include in their program of study an internship, or a study abroad experience, or a minor in a field outside of the College of Business Administration.

### Junior Year

#### First semester: 15 credits

BUS 320 (3), 341 (3), 335 (3), 365 (3), and one liberal elective (3).

#### Second semester: 15 credits

BUS 315 (3), BUS 355 (3), 342 (3), 448 (3), and one liberal elective (3).

### Senior Year

#### First semester: 15 credits

BUS 345 (3), two professional electives (6), and two liberal electives (6).

#### Second semester: 15 credits

BUS 445 [capstone] (3), 460 (3), two professional electives (6), and one liberal elective (3).

## International Business

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in international business. The curriculum is designed to prepare students to meet the challenges of an international career by achieving a high degree of proficiency in the language of another country as well as a background in its history, economy, politics, culture, and arts. In addition to the common body of knowledge required of all business students, international business majors will study business principles taught

from a global perspective. A required internship abroad and/or study abroad experience is an essential part of the program.

#### Junior Year

##### First semester: 15 credits

BUS 320 (3), 341 (3), 355 (3), 365 (3), and one foreign language (3).

##### Second semester: 15 credits

BUS 345 (3), 342 (3), 460 (3), one foreign language (3), and one liberal elective (3).

#### Senior Year

##### First semester: 15 credits

Study Abroad: Business-related courses (12) and one liberal elective (3).

##### Second semester: 15 credits

BUS 315 (3), 428 (3), 468 (3), 445 [capstone] (3), and one Letters course (3).

## Management Information Systems

As of fall 2007, admission to this program has been suspended.

## Marketing

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in marketing. Elective courses in the department expose students to career opportunities in a variety of fields in marketing. The college also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in marketing and the Doctor of Philosophy (Ph.D.) degree.

A major focus of marketing is determining product and service needs of consumers and industries as well as understanding how an organization deals with these marketing issues. The courses required of a marketing major give the student a well-rounded view of consumer and organizational needs.

#### Junior Year

##### First semester: 15 credits

BUS 315 (3), 355 (3), 365 (3), 366 (3), and one liberal elective (3).

##### Second semester: 15 credits

BUS 320 (3), 341 (3), 345 (3), 367 (3), and one liberal elective (3).

#### Senior Year

##### First semester: 15 credits

BUS 441 (3), 460 (3), 468 (3), and two liberal electives (6).

##### Second semester: 15 credits

BUS 445 [capstone] (3), 465 (3), 466 (3), one liberal elective (3), and one analytical/creative elective (3).

*Note:* One liberal elective must be chosen from either the list of creative electives {ART 204 (3), ART 215 (3), COM 208 (3), THE 261 (3), WRT 201 (3)} or the list of analytical electives {EEC 105 (3), ECN 306 (3), ENG 302 (3), LIN 220 (3), PHL 101 (3)}. Other courses may be substituted for this requirement with the consent of the dean.

## Supply Chain Management

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree with a major in supply chain management. The supply chain management major is a comprehensive program covering the basic and advanced topics necessary for designing, implementing, operating, and improving global supply chains.

Careers in supply chain management span every industry. Career options also include a diverse list of positions including inventory management, customer relationship management, scheduling, purchasing, and facilities management.

#### Junior Year

##### First semester: 15 credits

BUS 315 (3), 341 (3), 355 (3), 365 (3), and one liberal elective (3).

##### Second semester: 15 credits

BUS 320 (3), 335 (3), 360 (3), 467 (3), and one liberal elective (3).

#### Senior Year

##### First semester: 15 credits

BUS 345 (3), 460 (3), 466 (3), 469 (3), and one liberal elective (3).

##### Second semester: 15 credits

BUS 445 [capstone] (3), 462 (3), 463 (3), and two liberal electives (6).

## ALAN SHAWN FEINSTEIN COLLEGE OF CONTINUING EDUCATION

John H. McCray Jr., *Vice Provost for  
Urban Programs*

Carla A. Simonini, *Interim Associate Dean*

The Alan Shawn Feinstein College of Continuing Education offers courses and degree programs designed for adults whose family or work responsibilities may have caused an interruption in their formal post-high-school education. Adult students' unique needs are met through our ASFCCE dedicated staff, a flexible class schedule, and a supportive environment. Others find the campus's downtown location and offerings provide the convenience they need. The Feinstein Providence Campus offers the following academic programs:

### *Bachelor of Arts Degree*

Communication Studies

English

History

Psychology

### *Bachelor of Science Degree*

Clinical Laboratory Sciences (specialty in  
Biotechnology Manufacturing)

General Business Administration

Human Development and Family Studies

### *Bachelor of General Studies Degree*

Applied Communications

Business Institutions

Health Services Administration

Human Studies

### *Graduate-Level Programs*

Adult Education (M.A.)

Business Administration (M.B.A.)

Clinical Laboratory Science (M.S.)

Communication Studies (M.A.)

Labor Relations and Human Resources  
(M.S.)

Library and Information Studies (M.L.I.S.)

Public Administration (M.P.A.)

Information on the college's B.G.S. degree follows. For curriculum requirements on any of the other programs listed above, see the index to find the appropriate section of this catalog.



LEAP (Learning Enhancement for Adults Program), which helps students build confidence and skills in reading, writing, and basic computer applications, is available to interested returning adult students. Also, students may qualify for scholarships offered exclusively to ASFCCE students.

ASFCCE also offers for-credit certificate programs in applied behavioral psychology, psychology, alcohol and drug counseling, and thanatology, as well as non-credit certificate programs. Individual credit and noncredit Continuing Education Unit (CEU) courses are offered in addition to institutes and special courses planned for business, industry, labor, and government agencies.

Courses are offered on weekday mornings, afternoons, evenings, and Saturdays. The college also offers distance learning courses through the Internet. Students enrolling in a degree program may attend at times most convenient for them.

### **Bachelor of General Studies**

The Bachelor of General Studies (B.G.S.) program is designed for adults who have been out of school for five or more years. It is a good choice both for people who have never been to college and for students who attended college in the past but did not complete a degree. For the latter, the B.G.S.

program makes it possible to apply their previous educational experience toward a degree program. The admission process should begin with an interview with a B.G.S. advisor in the Providence Campus's Admission and Advising Office.

Qualified applicants interested in other programs at ASFCCE may also be interested in the college's performance-based admission policy; see page 28 for details.

The B.G.S. program consists of the following required sections: 1) Pro-Seminar (BGS 100), 2) Traditions and Transformations (URI 101B), 3) general education, 4) major curriculum, 5) electives, and 6) Senior Project (BGS 399).

A total of 118 credits is required for the Bachelor of General Studies degree.

### **Pro-Seminar for Returning Students**

(3 credits). This is the required entry course that introduces returning students to the college's academic environment. The BGS 100 course helps students identify their scholastic strengths and interests, and assists adults in building the self-confidence to pursue a degree plan. The Pro-Seminar is limited to 16 students and opens the door to the University by helping returning students adjust to academic life. The instructors are carefully chosen and all have prior experience in teaching adults.

While enrolled in the Pro-Seminar, B.G.S. students are encouraged to take one or more College Level Examinations Program (CLEP) tests to measure academic knowledge acquired through prior experience. Credits gained through these tests are applied to the general education requirements. (See page 31 for information on the CLEP tests.)

### Traditions and Transformations

(1 credit). URI 101B is a University-wide seminar to introduce new students to the academic culture of higher education and to significant issues that bear on the development of each student's goals for the undergraduate years. Students enroll concurrently in URI 101B and the Pro-Seminar (BGS 100).

### General Education Requirements

(39 credits). Students in the B.G.S. program must meet the University's general education requirements as explained on pages 33–35, including the URI 101 requirement. (Note: Health services administration majors must take MTH 107 or STA 220 as the math requirement.) B.G.S. students use Senior Seminars BGS 390, 391, 392 to fulfill general education requirements. Students should consult frequently with their B.G.S. advisor to be sure all general education requirements are met.

**Senior Seminars** (18 credits). The Senior Seminars are a distinctive feature of the B.G.S. program. These three six-credit seminars are interdisciplinary in nature and enable students to integrate and synthesize their educational experiences. These seminars are normally begun when students have completed their other general education courses and most of the courses required for their major.

BGS 390	Social Science Seminar (6 credits)
BGS 391	Natural Science Seminar (6 credits)
BGS 392	Humanities Seminar (6 credits)

**Major Curriculum** (45 credits). B.G.S. students can choose from the following majors: applied communications, business institutions, health services administration, and human studies. These majors allow students to take courses in several disciplines to meet their educational goals in a nontraditional way. A major may be made up of a carefully prescribed set of courses or it may be flexible in its requirements, allowing students to work creatively with an advisor to design an individualized program that meets both the student's needs and the general goals of the B.G.S. program.

**Electives** (24–27 credits). Electives permit students to complete the B.G.S. degree in a number of creative ways, through course work, carefully designed work experience, internships, or previous but relevant educational experience.

**Senior Project** (3 credits). All B.G.S. students must complete BGS 399. This **capstone** experience for B.G.S. students provides a structure that enables the student to integrate knowledge and skills from coursework and related experiences with a research project or field experience. The project must be designed so that it allows the student to demonstrate the relationship of subject matter, theory, and practice. Students are required to meet with the B.G.S. coordinator to plan a project proposal. This written proposal must meet with the approval of both the coordinator and an appropriate faculty advisor before the student can register for BGS 399.

### APPLIED COMMUNICATIONS MAJOR

Students interested in the broad field of applied communications will be interested in this major. It allows a student, working with an advisor, to design an individual program that must then be approved by the program coordinator.

**Communications Core** (24 credits). These courses, all at or above the 200 level, must be chosen from communication studies, journalism, and writing (or ENG 205 or 305), with 12 credits from one department and six credits from each of the other two.

Prerequisite communications courses are COM 100 and WRT 105.

**Methodology Course** (3 credits). Students may select COM 206, 381, 382, 383, HDF 202, PSY 300, or STA 308.

**Major Seminar (BGS 398 [capstone])** (3 credits). Students take this course near the end of their degree program, as it gives them an opportunity to review and evaluate the skills and knowledge they have acquired through their major.

**Area of Emphasis** (15 credits). With the help of an advisor, students select 15 credits that will comprise an area of emphasis, which may be used either to further develop skills in communications or for study in related areas. This area of emphasis must be approved by an advisor and the program coordinator by the beginning of the student's junior year.

### BUSINESS INSTITUTIONS MAJOR

Students interested in the broad field of business will be interested in this major. This is a fully prescribed program with a specific list of required courses (course codes in parentheses refer to the former codes for these courses):

BUS 110	Business Computing Applications (BAC 110) or CSC 101, Computing Concepts
BUS 111	Introduction to Business Analysis and Applications (BAC 120) or MTH 131, Applied Calculus I
BUS 201	Financial Accounting (ACC 201)
BUS 202	Managerial Accounting (ACC 202)
BUS 210	Managerial Statistics I (BAC 201) or STA 308, Introductory Statistics
BUS 315	Legal and Ethical Environment of Business I (BSL 333)
BUS 320	Financial Management (FIN 301)
BUS 340	Organization and Management Theory I (MGT 301)
BUS 355	Operations and Supply Chain Management (MSI 309)

BUS 365	Marketing Principles (MKT 301)
ECN 201	Principles of Economics: Microeconomics
ECN 202	Principles of Economics: Macroeconomics
WRT 227	Business Communications
	Business Elective (3 credits)

In addition to the courses above, students must elect one liberal elective course offered by a department outside their major. Most courses that fulfill these major requirements are available in Providence in the evening.

#### HEALTH SERVICES ADMINISTRATION MAJOR

This interdisciplinary major offers students a broad overview of the health care system, while allowing them to focus on a specific area of interest. The program provides strong preparation for entry or midlevel managerial and supervisory positions in organizations such as skilled nursing facilities, adult day care centers, home health care agencies, hospitals, clinics, laboratories, physicians' offices, governmental and regulatory agencies, and health plans. This course of study may also be applied in industries related to the health field, such as research and development, pharmaceuticals, and the insurance or computer industry. Graduates are eligible to sit for the Rhode Island exam for nursing home licensure, through courses taken in the area of emphasis.

This major is appropriate for students who have no previous exposure to this field, and for those who may already be employed in the field and are looking for a degree to give them the skills and knowledge to assume more significant responsibilities.

This major is also appropriate for students with 2-year allied health degrees who wish to continue their undergraduate studies. In most cases, a substantial portion of credits earned in the 2-year program will transfer toward the bachelor's degree.

	Major Courses (30 credits)
BUS 201	Financial Accounting (formerly ACC 201)
ECN 201	Principles of Economics: Microeconomics
ECN 360	Health Economics
HDF 202	Research Perspectives in Human Development & Family Studies
HDF 357	Family and Community Health
HSA 360	Health Services Administration
HSA 380	Introductory Health Services Practicum
PHL 314	Ethical Problems in Society and Medicine
PSC 481	Political Science Seminar: Health Care Policy and Politics
SOC 224	Health, Illness, and Medical Care

*Areas of Emphasis within the Health Services Administration Major (18 credits):* Students fulfill the area of emphasis requirement by choosing from existing minors (see page 35), or by designing an area of emphasis to fit the student's experience and career interests.

#### HUMAN STUDIES MAJOR

Students interested in the wide range of human studies or human services will be attracted to this major. It permits the student, working with an advisor, to design a major that will meet both personal and career goals. All human studies majors must have their program design approved in advance by an academic advisor and the program coordinator. It must include the following four parts:

*Social Science Core (24 credits):* Students are required to select 24 credits from three of the following departments in the College of Arts and Sciences: economics, history, political science, psychology, and sociology and anthropology; or coastal and marine policy in the College of the Environment and Life Sciences. These departments determine which of their courses are suitable for the B.G.S. major.

The 24 credits must be distributed as follows: four courses from one department, two courses from a second department, and two courses from a third. Only two prerequisite or introductory-level courses are allowed in the major. Students should meet with an advisor for more information regarding these courses.

*Methodology Course (3 credits):* Students are strongly advised to fulfill this requirement by taking HDF 202. In exceptional cases, students may be allowed to meet the methods requirement by taking HIS 495, PSY 300, SOC 301, or STA 220.

*Major Seminar (BGS 397 [capstone], 3 credits):* Students take this course near the end of their degree program. It will give them an opportunity to review and evaluate the skills and knowledge they have acquired through their major.

*Area of Emphasis (15 credits):* The area of emphasis provides the student with an opportunity to select a group of courses that focus on a particular problem or population of interest.

#### Registration and Admission

Students must enroll in courses prior to the beginning of each semester. Being enrolled in a course is not the same as being admitted to the University. To apply for admission to an undergraduate degree program, a student must follow the application procedure (description follows). However, credits earned through successful completion of courses may eventually be applied toward a degree program after a student is accepted as a degree candidate.

Beginning students who have been away from school for some time with little or no course work beyond high school are encouraged to register in the Pro-Seminar (BGS 100), and Traditions and Transformations (URI 101B) (see pages 74–75).

Any adult may enroll as a nonmatriculated student in ASFCCE. Most courses at the University are open to nonmatriculated students; however, day courses at the

Kingston campus are open only on a space-available basis.

All information and forms necessary for registration are available on the Providence campus Web site at [uri.edu/prov](http://uri.edu/prov). Our online schedule contains up-to-date course offerings and fees, and is available during the registration periods. You may also contact ASFCCE for a printed course schedule at 80 Washington Street, Providence, RI 02903; 401-277-5160.

**Application Procedure.** A student who wishes to enroll in an undergraduate degree program at ASFCCE should begin by scheduling an interview with an academic advisor to explore the options available and to discuss the student's previous educational experiences. The student then fills out an admission application and provides the necessary transcripts and other paperwork.

Once a student is admitted to an undergraduate degree program, he or she should consult frequently with the advisor. The student and advisor will fill out a program worksheet that lists the courses necessary to complete the degree.

**Alternate Ways to Earn Credit.** ASFCCE recognizes a number of ways to earn college credits. Students may take CLEP (College Level Examination Program) exams in a wide variety of areas to earn credit. Students may also participate in the Prior Learning Assessment (PLA) program to

document college-level learning acquired outside the college classroom. Credit is also available for some military training and employer-sponsored training. Contact an academic advisor for more information.

## Services for Students

The ASFCCE provides a number of services for students, including free academic advising, peer counseling, career counseling, tutoring, writing assistance, services for students with disabilities, and counseling and testing services. The Providence campus also has a bookstore, a library, and a snack bar, plus a comfortable student lounge area where students and faculty can meet, talk, and relax.

## Fees and Finances

Tuition and fees for ASFCCE students are given on page 20 of this catalog. They may also be found in the course schedules for the current term. The registration fee is not refundable except when URI cancels or closes a course. The Student Services Fee supports a student government, and various lectures and cultural events determined by an activities board of elected ASFCCE students. Fees for Special Programs courses vary (consult the course schedule or contact the Special Programs Office). For information on refunds, refer to page 22 of this catalog.

**Financial Aid.** Financial Aid advising is available to all ASFCCE students through our Admission and Advising Office. Only matriculated students enrolled on at least a half-time basis (six credits) may be considered for an award. Student Financial Assistance determines eligibility for all grants, loans, and employment, which are awarded on an academic-year basis. Financial aid will be awarded only after a student has applied for a Pell Grant and has submitted a Pell Student Eligibility Report to this office.

A limited number of scholarships are available to students matriculating at ASFCCE. Students are required to complete a FAFSA application to be considered. For a brochure, call 401-277-5160.

## COLLEGE OF ENGINEERING

Raymond Wright, *Interim Dean*  
George E. Veyera, *Interim Associate Dean*

**URI Engineering's Mission.** The College of Engineering is a diverse community of scholars, learners, and professional staff dedicated to the development and application of advanced technologies, and working together to enhance the quality of life for all. We are creative problem solvers, innovators, inventors, and entrepreneurs, applying our skills for the advancement of knowledge, service to our community, and the economic development of the state of Rhode Island and beyond. We prepare our graduates to be global leaders in a wide range of engineering disciplines and to create new knowledge, products, and services.

**Expected Learning Outcomes.** As required by the criteria of ABET, Inc., the national Accreditation Board of Engineering and Technology, graduates receiving baccalaureate degrees in all engineering disciplines will demonstrate:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

- (i) a recognition of the need for, and an ability to engage in, life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Engineers from all fields are heavily involved in the solution of technological and socio-technological problems; industry's needs are for balanced teams of both men and women from different engineering areas. Therefore, the college's goal is to stimulate our students to become creative, responsible engineers, aware of the social implications of their work, and flexible enough to adjust to the rapid changes taking place in the world and, consequently, in all branches of engineering.

The College of Engineering (COE) offers undergraduate majors in biomedical, chemical, chemical and ocean, civil, computer, electrical, industrial, mechanical, and ocean engineering. In addition, an ocean option is available in mechanical engineering. Because the same fundamental concepts underlie all branches of engineering, the freshman-year courses are quite similar for all curricula, and the choice of a specific branch of engineering may be delayed until the beginning of either the second term or the second year of study. Students electing one of the programs that include ocean options follow the curriculum for chemical or mechanical engineering for two or three years and enroll in several ocean engineering courses in the junior and senior years. All of the engineering curricula are based on an intense study of mathematics and the basic sciences supporting the fundamentals of each engineering discipline. These principles are applied to the understanding and solution of problems of current interest and importance in the field. Each curriculum is designed to provide the knowledge and ability necessary for practice as a professional engineer, or for successful graduate study, which may include law, business administration, or medicine, as well as engineering and science disciplines.

## Curriculum Requirements

Entering engineering students who have chosen a specific major should follow the particular program listed in this section. It is recommended that those students who have decided to major in engineering but have not selected a specific program take the following courses: CHM 101 and 102, EGR 105, MTH 141, PHY 203 and 273, and a general education requirement during their first semester. Students who are still undecided about their choice of major after completing the first semester should review their choice of courses for the second semester with their advisor to be certain that they meet the prerequisites for the sophomore year.

Students who are undecided about engineering but wish to keep it open as an option should note that MTH 141, 142; PHY 203, 204 and 273, 274; and a course in chemistry are required for graduation from the College of Engineering, and are prerequisites for many engineering courses. They must be taken before transferring from University College (UC) to the COE.

To transfer from UC to the COE, students must not only complete 24 credits with a grade point average of 2.00 or better, they must also complete all of the required mathematics, science, and engineering courses for the freshman year with a grade point average of 2.00 or better.

To meet graduation requirements, students enrolled in the COE must satisfactorily complete all courses of the curriculum in which they are registered and obtain a grade point average of 2.00 or better in all required science, mathematics, and engineering courses (including professional electives). Students are also required to complete an exit survey at least one semester prior to their anticipated graduation date. At the discretion of the dean, students who do not demonstrate satisfactory progress may be required to leave the COE.

**Student Advisement.** Engineering students are advised by engineering faculty members. While the student is in UC, the advising takes place at UC; once the student transfers to COE, advising takes place at the departmental level. The office of the Associate Dean of Students provides non-routine advising.

**General Education Requirements.** Engineering students must meet URI's general education requirements listed on pages 33-35, except that only three credits are required in the foreign language or culture component. In these courses, students are exposed to and challenged by concepts from the humanities and social sciences to ensure that the social relevance of their engineering activities will never be forgotten. In selecting courses to satisfy these requirements, students should consult with their advisors to be certain that they have met department-specific course requirements. The requirements in mathematics and natural sciences are satisfied by required courses in the engineering curricula.

**Computers.** The College of Engineering's Computer Center (ECC) supports the teaching and research activities in the college; it is located in Kirk. Students are assigned computer accounts upon entering the COE and use these accounts until they graduate. Email accounts are maintained separately and do not expire. In addition to providing the computer technologies that engineering students rely on for their course work, the ECC also provides faculty members with the resources necessary for their teaching and research commitments, through the use of network services, classrooms, and the expertise of the staff in identifying and procuring software.

The ECC houses 75 workstations and offers scanning, printing, and copying services, along with cable and wireless Internet access for personal laptop computers. In addition to a large general-purpose area, the ECC has four classrooms, each containing a specific type of equipment, which can be reserved for classes or labs. All equipment in the ECC is networked and controlled by two centralized servers.

The Department of Chemical Engineering has a senior computing room with PCs and a junior computing room, also with PCs. Several specialized software packages such as Aspen and FEMLAB are available on these computers for undergraduate teaching and research. Printers are located in all the computer rooms, and a dedicated large-scale plotter is available in the department.

The Department of Civil and Environmental Engineering has two computational facilities. The CADD Laboratory contains 22 state-of-the-art computers, two large-format plotters, and several printers; it is also equipped with a direct projection multimedia system. In addition to AutoCAD, other software packages are available in this laboratory including AutoCOGO, CIVIL, CONSOL, Darwin, Eaglepoint, HCS, Land Development Desktop, MicroPaver, RSS, PCSTABL, RamSteel, Seep/W, Sewer-CAD, Slope/W, SRWALL, STAADPro, SURVEY, Synchro, TransCAD, TSIS, WaterCAD, ZStress, and others. Modern geomatics and surveying equipment (funded by the Champlin Foundations) including electronic Total Station and GPS for field data acquisition are linked to the CADD lab computers, printers, and plotters for graphic GIS representation and analysis. The senior Capstone Design Project Studio has six computers used by the design teams during the integrated **capstone** design project.

The Department of Electrical and Computer Engineering has numerous multiprocessor Linux and UNIX servers. The primary servers feature hardware raid and fiber-optic gigabit network connections. The main computing lab hosts 14 general use, dual-monitor Linux work stations, many of which have dual-core processors. These machines are available 24 hours a day to all students in the department. In addition, there are approximately 50 Linux workstations and 40 Windows systems dispersed throughout laboratories and offices. Available software includes Matlab for signal processing, HSPICE for analog circuit simulation, Quartus for FPGA simulation and design, as well as thousands of open-source applications. Numerous laser printers are available, including duplex (two-sided) and color

variants. Wireless network access is available throughout the department.

The Department of Mechanical Engineering has a computer classroom that includes 25 networked PC workstations, two high-speed laser printers, and a direct projection system for classroom and seminar presentations. Application software includes SolidWorks, Working Model, Matlab, Abaqus, Algor, Excel, FEMLAB, Maple, Engineering Equation Solver, Compact 2-D (CFD) and others. In addition, laboratories in the Mechanical Engineering Department are equipped with a variety of computers for computational modeling studies, high-speed data acquisition, and control of mechanical devices.

The Department of Ocean Engineering has a computer laboratory at the Bay Campus to support both their education and research programs. The laboratory is permanently accessible to students, both physically (in two computer rooms located in the Middleton Building, with electronic code access) and remotely through the Internet. The laboratory is equipped with nine Pentium IV and five dual-core PC workstations, two laser printers, and an 8-processor Microways Opteron computer cluster running UNIX. Each PC features, as a minimum, MatLab, Word, Excel, PowerPoint, LaTeX, Scientific Word, Netscape/Explorer, AUTOCAD, LabView, SolidWorks, and email software. The cluster has an MPI parallel FORTRAN compiler.

### Minors and Double Majors

Students wanting to obtain strengths in other areas of academic specialization and yet remain in engineering are encouraged to do so by completing either a minor (please refer to page 35) or double major.

The College of Engineering in conjunction with the College of Arts and Sciences also offers a five-year **International Engineering Program** (IEP) in which students earn two degrees: a Bachelor of Science in engineering and a Bachelor of Arts in a foreign language. The foreign languages currently offered by the IEP are Chinese, German, French, and Spanish. In addition to their engineering and language-related

courses, students spend six months abroad in a professional internship in Europe, Latin America, the Caribbean, or Asia. Upon graduation, students are well prepared to compete in the global marketplace. To enroll, an engineering student simply registers and follows the recommended outline of courses for the specific language. In 1992, the IEP was selected as the recipient of the Award for Educational Innovation by ABET, the national Accreditation Board for Engineering and Technology (currently known as ABET, Inc.).

**Cooperative Education Program.** Optional for juniors and seniors (with a GPA of at least 2.50) in all engineering departments, the Cooperative Education Program assists students with placements for part-time or full-time work directly related to a student's field of study. Enrollment information may be obtained from the Dean's Office, 102 Bliss Hall.

**Engineering and M.B.A. Program.** This five-year program offers students the opportunity to earn a Bachelor of Science in engineering and a Master of Business Administration (M.B.A.). Students with a GPA of 3.00 or better may enroll during their senior year with successful completion of the Graduate Management Admissions Test (GMAT).

**Accreditation.** A national accrediting organization, ABET, Inc. (formerly known as Accreditation Board for Engineering and Technology, or ABET) established in 1933 and composed of representatives from technical societies, assures professional standards through periodic evaluations of the programs of the college. ABET, Inc. may be contacted at 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 or by phone at 410-347-7700.

Continuous accreditation of URI's engineering programs by ABET, Inc. has been in place since 1936 for the curricula of civil, electrical, and mechanical engineering, 1954 for chemical engineering, 1957 for industrial engineering, 1992 for computer engineering, 1995 for ocean engineering, and 1989 for the M.S. in manufacturing engineering.

URI's College of Engineering is a member of the American Society for Engineering Education.

**Graduate Degrees.** Graduate study is available in the College of Engineering at the Master of Science and Doctorate (Ph.D.) level. For a listing of advanced degrees, see the "Graduate Programs" section of this catalog.

## Biomedical Engineering

The Bachelor of Science (B.S.) degree in biomedical engineering is offered by the Department of Electrical, Computer, and Biomedical Engineering. Specialization in biomedical engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering.

*Coordinator:* Professor Ying Sun (Electrical, Computer, and Biomedical Engineering). Professors Boudreaux-Bartels, Jackson, Kumaresan, Ohley, and Tufts; Associate Professor Vetter; Adjunct Professor Chiaramida.

**Program Educational Objectives.** The biomedical engineering program at URI has four primary objectives:

1) Produce graduates who are able to practice biomedical engineering to serve hospitals, government agencies, national, state, regional, and international industries.

2) Produce graduates with the necessary background and technical skills to work professionally in one or more of the following areas: biomedical electronics, medical instrumentation, medical imaging, biomedical signal processing, rehabilitation engineering, and medical informatics.

3) Prepare graduates for personal and professional success with awareness and commitment to their ethical and social responsibilities, both as individuals and in team environments.

4) Prepare graduates who are capable of entering and succeeding in an advanced degree program in a field such as engineering, science, business, or medicine.

**Program Description.** Biomedical engineering is an interdisciplinary area in which engineering techniques are applied to problem solving in the life sciences and medicine. Biomedical engineers design medical instruments for diagnosis and the treatment of various diseases as well as for research in biology. Examples of instruments for diagnosis include electrocardiographs, electroencephalographs, automatic blood analyzers, and medical imaging systems such as X-ray imaging, radio-nuclide imaging, ultrasound imaging, computer-assisted tomography, and magnetic resonance imaging. Examples of instruments for treatment include radiotherapy machines, pacemakers, cardiac-assist devices, intelligent drug delivery systems, and lasers for surgery. Biomedical engineers develop artificial organs for prosthesis and various computer software and hardware systems to help provide high-quality, cost-effective health care.

Biomedical engineers are employed in the medical instrument industry, where they invent, design, manufacture, sell, and service medical equipment; hospitals, where they evaluate, select, maintain, and provide training for the use of complex medical equipment; and medical and biological research institutes, where they use unique analytical ability and instrumentation skills to conduct advanced research.

URI's biomedical engineering program combines study in the biological sciences with the areas of engineering that are particularly important for the application of modern technology to medicine. This curriculum is designed to provide students with not only a general background in biomedical engineering but also a special focus on the skills in electrical engineering necessary for developing medical devices. With a few minor elective changes, the program also satisfies the entrance requirements of most medical schools, but students who plan to go on to medical school should consult the premedical advisor and the coordinator of the biomedical engineering program.

For transfer from University College to the College of Engineering in the biomedical engineering program, students must

have completed *all science, mathematics, and engineering courses required during the first two semesters* with a grade point average of 2.00 or better.

### Minimum Requirements

The major requires 133–135 credits.

*Humanities and Social Sciences* (27 credits): see the general education requirements for the College of Engineering. Students should consult with their advisors regarding distribution of credits and approved courses.

*Mathematics* (17 credits): MTH 141, 142, 243, 362, three credits of an MTH elective (215 or any 300- to 500-level mathematics course except MTH 381).

*Basic Sciences* (23 credits): CHM 101, 102, 124; PHY 203, 273, 204, 274; BIO 121, 442, 444.

*Computer Science* (4 credits): CSC 200.

*Engineering Sciences and Design* (59–61 credits): BME 464/465; EGR 105, 106; ELE 201, 202, 205, 207, 212, 215, 282, 307, 313, 314, 342, 343, 382, 400, 482, 489; two engineering electives (chosen from CHE 333, 347, 547; CVE 220, 374; ELE 331, 423; IME 404, 411, 412; MCE 323, 341, 354); two electrical engineering design electives (chosen from ELE 401, 405, 408, 427, 432, 436, 437, 438, 444, 447, 457, 458).

*Free Elective*: 3 credits.

### Freshman Year

*First semester: 16 credits*

CHM 101 (3), 102 (1); EGR 105 (1); MTH 141 (4); PHY 203 (3), 273 (1), and general education requirement (3).

*Second semester: 17 credits*

ECN 201 (3); EGR 106 (2); MTH 142 (4); PHY 204 (3); 274 (1), and BIO 121 (4).

### Sophomore Year

*First semester: 18 credits*

CHM 124 (3); CSC 200 (4); ELE 201 (3), 202 (1), 282 (1); MTH 362 (3), and general education requirement (3).

*Second semester: 17 credits*

ELE 207 (3), 212 (3), 215 (2); MTH 243 (3), and general education requirements (6).

### Junior Year

*First semester: 18 credits*

ELE 205 (3), 313 (3), 342 (4), 382 (1); BIO 442 (3), 444 (1), and general education requirement (3).

*Second semester: 17 credits*

ELE 307 (3), 314 (3), 343 (4), 482 (1), engineering elective<sup>1</sup> (3), and general education requirement (3).

### Senior Year<sup>7</sup>

*First semester: 16–17 credits*

BME 464 (3), 465 (1); electrical engineering design elective<sup>2</sup> (3–4), engineering elective<sup>1</sup> (3), mathematics elective<sup>3</sup> (3), and general education requirement (3).

*Second semester: 14–15 credits*

ELE 400 (1), 489 (4), electrical engineering design elective<sup>2</sup> (3–4), free elective (3), and general education requirement (3).

## Chemical Engineering

The Department of Chemical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in chemical engineering that is accredited by ABET, Inc. In cooperation with the Department of Ocean Engineering, the department offers a curriculum leading to the Bachelor of Science degree in chemical and ocean engineering (not accredited). The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

*Faculty*: Professor Bose, *chair*. Professors S. Barnett, R. Brown, Gregory, Knickle, and Lucia; Associate Professors Gray, Greenfield, and Rivero-Hudec; Assistant Professor Bothun; Associate Research Professors Crisman and Park; Adjunct Assistant Professor Trottier; Professors Emeriti Rockett and Rose.

The chemical engineer is concerned with the application and control of processes leading to changes in chemical composition. These processes are most frequently associated with the production of useful products (chemicals, fuels, metals, foods, pharmaceuticals, paper, plastics, and the like), but also include processes such as removal of toxic components from the blood by an artificial kidney, environmental cleanup, and semiconductor processing. The chemical engineer's domain includes more efficient production and use of energy, processing of wastes, and protection of the environment.

Chemical engineers have a strong foundation in chemistry, physics, mathematics, and basic engineering. Chemical engineering courses include thermodynamics, transport phenomena, mass transfer operations, materials engineering, process dynamics and control, kinetics, and plant design. The student has the opportunity to operate small-scale equipment and to visit local industry. Intensive work is undertaken in the solution of complex problems in which economics and optimization of engineering design are emphasized.

The Department of Chemical Engineering has introduced a new biology track into its curriculum. The primary motivation is to respond to advances in our understanding of biological processes at the molecular and macroscopic levels, and the unique opportunity for chemical engineers to translate that understanding to useful processes. The application of the chemical engineering paradigm to biology will enable graduates to develop new molecular biology tools; drug delivery systems; artificial skin, organs and tissues; sensors and alternative fuels; and to integrate new bio-products into existing materials. The new curriculum is founded on the core principles of transport phenomena, unit operations, thermodynamics, and reaction kinetics. Students opting for this track will take a series of five courses in the Biochemistry and Cell and Molecular Biology departments. Besides preparing students for the biotechnology industry, this combination of biology, chemical engineer-

ing, and chemistry courses is relevant to those considering medical school.

**Department Mission Statement and Program Objectives.** Consistent with missions of the University and the College of Engineering, URI's Department of Chemical Engineering seeks to prepare students to practice professionally in the fields of chemical engineering through the provision of high quality undergraduate and graduate educational programs, to provide an environment for satisfying faculty career development, and to maintain a world-renowned scholarly research program.

**Program Educational Objectives.** The chemical engineering program at URI has four primary objectives:

1) Produce graduates who are able to successfully practice chemical engineering to serve state, local, national, and international industries, and government agencies.

2) Produce graduates with the necessary background and technical skills to work professionally as individuals or in teams in chemical engineering practice or in graduate schools.

3) Prepare graduates for personal and professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

4) Prepare graduates to be interested, motivated, and capable of pursuing continued lifelong learning through further graduate education, short courses, or other training programs in engineering or related fields.

URI's chemical engineering program is more than just a collection of courses and credit hours whose content reflects the required criteria. The program has also been carefully designed to prepare students for the profession of chemical engineering through study, experience, and practice. Through eight specific program goals, the Department of Chemical Engineering at URI seeks to:

1) provide the necessary background in science, particularly chemistry, physics, and

advanced mathematics through the study of differential equations, so that students will be able to continue their education in the engineering sciences, with depth of understanding, and learn to apply these subjects to the formulation and solution of engineering problems;

2) provide a broad cross section of fundamental engineering science courses, including some from other engineering disciplines so that our students will acquire an understanding of the way in which chemistry, physics, and mathematics have been and continue to be used to solve important engineering problems relevant to the general chemical engineering and engineering design;

3) provide students with experience in conducting and planning experiments in the modern engineering laboratory, including interfacing experiments with computers as well as interpreting the significance of resulting data and properly reporting results in well-written technical reports;

4) provide experience in the process of original chemical engineering design in the areas of equipment design, process design, and plant design through the process of formulating a design solution to a perceived need and then executing the design and evaluating its performance, including economic considerations and societal impacts if any, along with other related constraints, culminating in both written and oral presentations of results;

5) provide experience with the multi-faceted aspects of using computers to solve problems and present results with word processing, spreadsheet, presentation, and professional-level applications software used for design and analysis; and provide for obtaining and using information on the World Wide Web;

6) provide a familiarity with professional issues in chemical engineering, including ethics, issues related to the global economy and to emerging technologies, and fostering of important job-related skills such as improved oral and written communications and experience in working in teams at a number of levels;

7) encourage students to become actively engaged in the student chapter of the American Institute of Chemical Engineers and other student organizations, and to continue these associations after graduation with an emphasis on the importance of lifelong professional development including the desirability of attending graduate school or otherwise obtaining continuing or advanced education; and

8) make available continuous individual advising throughout the entire undergraduate educational experience to insure that each student makes the most of the educational opportunities provided by URI, particularly those related to general education electives that might enhance an engineering education, and special programs such as internships, cooperative experience and especially the International Engineering Programs in Chinese, German, French, and Spanish which are a unique opportunity available to globally motivated URI engineering students.

The major requires 129–130 credits.

#### *Freshman Year*

##### *First semester: 16 credits*

CHM 101<sup>4</sup> (3), 102<sup>4</sup> (1), EGR 105 (1), MTH 141 (4), PHY 203 (3), PHY 273 (1), and general education requirement (3).

##### *Second semester: 17 credits*

CHM 112<sup>4</sup> (3), 114<sup>4</sup> (1), EGR 106 (2), MTH 142 (4), PHY 204 (3), 274 (1), and ECN 201 (3).

#### *Sophomore Year*

##### *First semester: 15–16 credits*

CHE 212 (3), CHM 291 (4) or CHM 227 (3), MTH 243 (3), and general education requirements (6).

##### *Second semester: 15–16 credits*

CHE 272 (3), 313 (3), 332 (3); CHM 228 or BCH 311, or an approved advanced chemistry course (3), and MTH 244 or 362 (3).

**Junior Year***First semester: 17 credits*

CHE 314 (3), 347 (3), CHM 431 (3), 335 (2), approved mathematics elective<sup>3</sup> (3), and general education requirement (3).

*Second semester: 15 credits*

CHE 348 (3), 464 (3), CHM 432 or approved department elective<sup>5</sup> (3), and general education requirements (6).

**Senior Year***First semester: 17 credits*

CHE 328 (1), 345 [capstone] (2), 349 (2), 351 [capstone] (3), 425 (3), and approved professional elective (3), and general education requirement (3).

*Second semester: 17 credits*

CHE 346 [capstone] (2), 352 [capstone] (3), one 3-credit approved professional elective (3), CVE 220 or an approved professional elective (6), and general education requirement (3).

**Chemical and Ocean Engineering.**

Students enrolled in this curriculum follow the program of study for chemical engineering during their freshman, sophomore, and junior years. The senior year curriculum follows.

The major requires 134–136 credits.

**Senior Year***First semester: 18 credits*

CHE 328 (1), 349 (2), 351 [capstone] (3), 403 [capstone] (3), 464 (3), and approved professional elective (6).

*Second semester: 19 credits*

CHE 352 [capstone] (3), 404 [capstone] (3), 534 (3), OCE 311 (4), and general education requirements (6).

**Chemical Engineering Biology Track**

This track in the chemical engineering major requires 129 credits.

**Freshman Year***First semester: 16 credits*

CHM 101<sup>4</sup> (3), 102<sup>4</sup> (1); EGR 105 (1); MTH 141 (4); PHY 203 (3), 273 (1), and general education requirement (3).

*Second semester: 17 credits*

BIO 101 (4); CHM 112<sup>4</sup> (3), 114<sup>4</sup> (1); EGR 106 (2); MTH 142 (4); and ECN 201 (3).

**Sophomore Year***First semester: 15 credits*

CHE 212 (3), 227 (3); MTH 243 (3), and general education requirements (6).

*Second semester: 15 credits*

CHE 272 (3), 313 (3), 332 (3); BIO 341 (3); and MTH 244 (3) or 362 (3).

**Junior Year***First semester: 16 credits*

CHE 314 (3), 347 (3); BCH 311 (3); PHY 204 (3), 274 (1), and general education requirement (3).

*Second semester: 19 credits*

CHE 348 (3), 464 (3); MIC 211 (4), BIO 352 (3), and general education requirements (6).

**Senior Year***First semester: 17 credits*

CHE 328 (1), 345 [capstone] (2), 349 (2), 351 [capstone] (3), 425 (3), approved professional elective (3), and general education requirement (3).

*Second semester: 17 credits*

CHE 346 [capstone] (2), 352 [capstone] (3); BIO 437 (3), an approved professional elective (3), approved math elective (3), and general education requirements (3).

**Chemical Engineering Pharmaceutical Track.**

Biopharmaceuticals is one of the fastest growing industrial sectors both in the United States and worldwide, with a projected growth rate of ten percent per year for the foreseeable future. Driving this rapid growth are the worldwide increase in average life span, major developments in our understanding of key factors behind the development of disease, and important innovations in drug formulations and delivery. This growth has created a need for graduates who are well-versed in the basic sciences as well as all technological aspects related to the development process for therapeutic agents—production, scale-up and processing, formulation and delivery, and regulatory constraints. The pharmaceutical engineering B.S. degree program within chemical engineering—new for 2007–2008—serves to meet this need. It combines the well-known strengths of the College of Pharmacy with those of the Department of Chemical Engineering, for a curriculum that will produce leaders in the pharmaceutical industry.

Students follow a curriculum similar to that for traditional chemical engineering, but with biology, biochemistry, and biomedical-and-pharmaceutical-science courses replacing some of the other technical and science courses. The major requires 132 credits.

**Freshman Year***First Semester: 16 credits*

CHM 101 (3) and 102 (1); EGR 105 (1); MTH 141 (4); PHY 203 (3) and 273 (1), and general education requirements (3)

**Sophomore Year***First Semester: 15 credits*

CHE 212 (3); CHM 227 (3); MTH 243 (3), and general education requirements (6).

**Junior Year***First Semester: 16 credits*

BPS 301 (2), 303 (2), and 305 (2); CHE 314 (3) and 347 (3); PHY 204 (3) and 274 (1).

**Freshman Year****Second Semester: 17 credits**

BIO 101 (4); CHM 112 (3) and 114 (1); EGR 106 (2); MTH 142 (4), and ECN 201 (3) or general education requirements (3).

**Sophomore Year****Second Semester: 18 credits**

BCH 311 (3); CHE 272 (3), 313 (3), and 332 (3); MTH 244 (3) or 362 (3), and general education requirements (3).

**Junior Year****Second Semester: 16 credits**

BIO 341 (3); CHE 348 (3) and 464 (3); MIC 211 (4), and general education requirements (3).

## Civil Engineering

The Department of Civil and Environmental Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in civil engineering. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in civil and environmental engineering. The Bachelor of Science program in civil engineering is accredited by ABET, Inc.

**Faculty:** Professor Lee, *chairperson*. Professors Tsiatas, Veyera, and R. Wright; Associate Professors Baxter, Karamanlidis, and Thieme; Assistant Professors Cindy, Hunter, and Thomas; Adjunct Professors Baird, Harr, and T. Wright; Adjunct Associate Professors Apostol and O'Neill; Adjunct Assistant Professors Badorek, George, and Osborn; Professors Emeriti Kovacs, Marcus, McEwen, Poon, and Urish.

**Department Mission Statement.** Consistent with the missions of the University of Rhode Island and the College of Engineering, the Department of Civil and Environmental Engineering seeks to prepare students to practice professionally in the national and international marketplace in the field of Civil and Environmental Engineering through the provision of high quality undergraduate and graduate educational programs and research opportunities; provide an environment that encourages and

supports faculty career development and professional/community service; actively promote diversity; and maintain a nationally recognized research program.

**Bachelor of Science in Civil Engineering (BSCE) Program Mission Statement.** Consistent with the mission of the Department of Civil and Environmental Engineering, the BSCE Program will prepare graduates for successful careers, advanced studies at the graduate level, and lifelong learning based upon a solid foundation of technical ability, high standards of professional ethics, and strong communication skills.

**BSCE Program Educational Objectives.** The BSCE program at URI has four primary objectives:

- 1) Produce graduates who are able to successfully practice civil engineering to serve local, state, regional, national and international industries, and government agencies.
- 2) Produce graduates with the necessary background and technical skills to work professionally in one or more of the following areas: environmental engineering, geotechnical engineering, structural engineering, transportation engineering, water resources engineering.
- 3) Prepare graduates for personal and professional success with awareness of and commitment to their ethical and social responsibilities, and diversity, both as individuals and in team environments.
- 4) Prepare graduates to be interested in, motivated for, and capable of pursuing continued lifelong learning through further graduate education or other training programs in engineering or related fields.
- 5) Prepare graduates for successful careers and advanced graduate studies based upon a solid foundation of technical ability, high standards of professional ethics, and strong communication skills. Program outcomes describe what the students are expected to know and have the ability to do by the time of graduation. The attainment of these outcomes indicates that the student is equipped to achieve the BSCE program educational objectives. The outcomes for the BSCE program are as follows:
- 6) An appropriate fundamental understanding of mathematics, physics, chemistry, geology, and other basic sciences.
- 7) Basic computer skills consistent with application to civil engineering problem-solving.
- 8) Basic engineering knowledge across a range of subjects including mechanics, mechanics of materials, engineering construction materials, statics, dynamics, fluid mechanics, and CADD.
- 9) An understanding of basic economics, together with approaches to economics-based decision-making.
- 10) A working knowledge of probability and statistics as applied to civil engineering problems.
- 11) Basic technical proficiency in at least four of the recognized civil engineering focus areas.
- 12) An understanding of the intra-disciplinary approach in civil engineering problem-solving and design at the design project level through an integrated **capstone** design project experience.
- 13) Experience with individual and team-based approaches to civil engineering problem solving in the classroom, laboratory, and through an integrated **capstone** design project experience.
- 14) Practical and hands-on laboratory experience solving civil engineering problems involving measuring physical phenomena and interpreting results.
- 15) An understanding of ethics of engineering activities, professional standards and responsibilities, the relationships between engineering and society in general, and the necessity for lifelong learning.
- 16) Well-developed written communication skills, and experience with oral communications, both individually and on teams.
- 17) A broad understanding and global perspective of society in general by exposure to fine arts, literature, letters, foreign language or culture, social science, and English communications.
- 18) An opportunity to obtain membership in and become active in the student chapter of the American Society of Civil En-

gineers, develop teamwork and leadership skills, and participate in service activities related to the local community and the civil engineering professional society.

Civil engineers are responsible for researching, developing, planning, designing, constructing, and managing many of the complex systems and facilities essential to modern civilization. These include environmental engineering systems; water supply and pollution control systems; all types of transportation systems, from pipelines to city streets; structural systems from residential buildings to city skyscrapers, power plants, and offshore platforms; and all types of geotechnical systems from foundations to dams. Civil engineers play important roles in planning and administration with government agencies at all levels, especially those dealing with public works, transportation, environmental control, water supply, and energy.

The curriculum provides students with an excellent background to pursue graduate study or to enter directly into professional practice in industry or government after graduation. The first year is devoted largely to courses in mathematics, chemistry, physics, and engineering science common to all engineering curriculums. During the sophomore year, students take five courses in civil engineering including CADD, geomatics, mechanics of materials and two laboratories. In their last two years, students develop a proficiency in environmental engineering, geotechnical engineering, structural engineering, and transportation engineering. They can also meet their own professional goals through the selection of professional electives in these areas as well as construction management. Professional electives are selected in consultation with the student's advisor to satisfy ABET, Inc.'s accreditation requirements.

The major requires 129 credits.

*Freshman Year*

*First semester: 16 credits*

CHM 101 (3), 102 (1); EGR 105 (1); MTH 141 (4); PHY 203 (3), 273 (1), and general education requirement (3).

*Second semester: 16 credits*

EGR 106 (2); MTH 142 (4); PHY 204 (3), 274 (1); ECN 201 (3) (S), and general education requirement (3).

*Sophomore Year*

*First semester: 15 credits*

CVE 240 (2), 241 (1), 250 (3); MCE 262 (3); MTH 243 (3), and general education requirement (3).

*Second semester: 17 credits*

CVE 220 (3), 221 (1); GEO 103 (4); MCE 263 (3); MTH 244 (3), and general education requirement (3).

*Junior Year*

*First semester: 18 credits*

CVE 346 (3), 354 (3), 355 (1), 374 (3), 375 (1), 381 (3), 382 (1), and MCE 354 (3).

*Second semester: 17 credits*

CVE 370 (3), 371 (1), 347 (3), 348 (1); STA 409 (3), general education requirement (3), and one 3-credit professional elective (list of professional electives follows).

*Senior Year*

*First semester: 15 credits*

CVE 465 (3), 466 (1), 497 [capstone] (2), general education requirements (6), and one 3-credit professional elective (list of professional electives follows).

*Second semester: 15 credits*

CVE 483 (3), 498 [capstone] (3), free elective (3), general education requirement (3), and one 3-credit professional elective (list of professional electives follows).

*Professional Electives.* Three of the nine credits of required professional electives must be selected from the following courses:

CVE 470, 471, 475, 478. The remaining six credits are to be selected from the list in the Civil Engineering Undergraduate Student Handbook. It is recommended that students consider selecting from the Civil Engineering professional elective courses to satisfy the free elective requirement.

## Computer Engineering

The Bachelor of Science (B.S.) degree in computer engineering is offered by the Department of Electrical, Computer, and Biomedical Engineering and is accredited by ABET, Inc. Specialization in computer engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering.

*Coordinator:* Professor Lo (Electrical, Computer, and Biomedical Engineering). Professors Ohley, Ying Sun, Tufts, and Qing Yang; Assistant Professors Sendag and Yan Sun; Professor-in-Residence Uht.

**Program Educational Objectives.** The objectives of the computer-engineering program at URI are the following:

1) Produce graduates who are able to practice computer engineering to serve government agencies and state, regional, national, and international industries.

2) Produce graduates with the necessary background and technical skills to work professionally in one or more of the following areas: computer hardware and software design, computer-based systems, network design, system integration, or electronic design automation.

3) Prepare graduates for personal and professional success with awareness and commitment to their ethical and social responsibilities, both as individuals and in team environments.

4) Prepare graduates who are capable of entering and succeeding in an advanced degree program in a field such as engineering, science, or business.

**Program Description.** Digital computer and communication systems have transformed society in a profound way. The examples range from super powerful scientific computers, the Internet and the World Wide Web, to cell phones and smart cards. Traditionally, computer engineering has been a discipline that combines both electrical engineering and computer science. The URI computer engineering program is thus designed so the students will have a strong foundation in the relevant fields of electrical engineering and computer science, while

establishing themselves with the latest computer engineering topics, such as advanced computer system architecture, design and programming, computer communication, electronic design automation, and high-level digital design methodologies.

The computer engineering core courses can be categorized as follows: (1) ELE 208, 305, and 408 are core courses for computer system architecture and hardware and software organization and interaction. (2) ELE 201/202, 306, and 405 are the core courses for digital design with electronic design automation and rapid prototyping, and for computer system integration. (3) ELE 313 and 437 and CSC 412 are core courses for computer communication and networks. The computer engineering program has three computer engineering electives and one free elective in the senior year so students can further expand into areas such as signals and systems, digital control, electronics, and computer software.

The computer engineering program culminates in the senior year with two major design experiences. First, ELE 408 is where all the skills accumulated through the curriculum will be employed in a group senior design project. Second, ELE 480 and 481 provide each student with the opportunity to work in a multi-disciplinary team in a senior **capstone** design project.

Graduates from the program go on to positions in both government agencies and the private sector, or enter graduate school for further study. Many computer engineering undergraduate students work with faculty on research projects before entering graduate school.

To transfer from University College to the College of Engineering's computer engineering program, students must have completed *all science, mathematics, and engineering courses required during the first two semesters* with a grade point average of 2.00 or better.

### Minimum Requirements

*Humanities and Social Sciences* (27 credits): see the general education requirements for the College of Engineering. Students should consult their advisors regarding distribution

of credits and approved courses. (ECN 201 is included in the 27-credit total.)

*Mathematics* (20 credits): MTH 141, 142, 243, 362, 447, 451.

*Basic Sciences* (12 credits): CHM 101, 102; PHY 203, 273, 204, 274.

*Computer Science* (at least 12 credits): CSC 211, 212, 412, and CE electives.

*Engineering Sciences and Design* (42 credits): ELE 201, 202, 208, 212, 215, 305, 306, 313, 342, 400, 405, 408, 437, 480, 481.

*Computer Engineering Elective* (9–12 credits): Three courses from: BME 464/465, any ELE 300- to 400-level course not otherwise required by the major, any ELE 500-level course with petition, and CSC 301, 305, 402, 406, 415, 436, and 481.

*Free Elective* (3 credits): Any course may be used as a free elective.

*College of Engineering* (3 credits): EGR 105, 106.

The major requires 128–131 credits.

*Freshman Year*

*First semester: 16 credits*

MTH 141 (4); CHM 101 (3), 102 (1); PHY 203 (3), 273 (1); EGR 105 (1), and general education requirement (3).

*Second semester: 16 credits*

ELE 208 (3); MTH 142 (4); PHY 204 (3), 274 (1); ECN 201 (3), and EGR 106 (2).

*Sophomore Year*

*First semester: 17 credits*

ELE 201 (3), 202 (1); MTH 362 (3); CSC 211 (4), and general education requirements (6).

*Second semester: 15 credits*

ELE 212 (3), 215 (2); MTH 243 (3); CSC 212 (4), and general education requirement (3).

*Junior Year*

*First semester: 16 credits*

ELE 305 (3), 313 (3), 342 (4); MTH/CSC 447 (3), and general education requirement (3).

*Second semester: 17 credits*

ELE 306 (4); MTH 451 (3); CSC 412 (4), and general education requirements (6).

*Senior Year: (31–34 credits)<sup>7</sup>*

ELE 400 (1), 405 (4), 408 (4), 437 (3), 480 (2), 481 (2), computer engineering elective<sup>6</sup> (9–12), free elective (3), and general education requirement (3).

**Minor in Computer Engineering.** Students who are interested in pursuing a minor in computer engineering are encouraged to speak with the department chair to discuss course requirements.

## Electrical Engineering

The Department of Electrical, Computer, and Biomedical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

*Faculty:* Professor Boudreaux-Bartels, *chairperson*. Professors Daly, Fischer, Jackson, Kay, Kumaresan, Lo, Mardix, Ohley, Ying Sun, Sunak, Swaszek, Tufts, Vaccaro, and Q. Yang; Associate Professor Vetter; Assistant Professors Sendag and Yan Sun; Professor-in-Residence Uht; Adjunct Professors Banerjee, Cooley, Middleton, and Turtle; Adjunct Assistant Professors Davis and Sepe; Professors Emeriti Haas, Lengyel, Lindgren, Mitra, Sadasiv, and Spence.

**Program Educational Objectives.** The objectives of URI's electrical engineering program are the following:

1) Produce graduates who are able to practice electrical engineering to serve government agencies or state, regional, national, and international industries.

2) Produce graduates with the necessary background and technical skills to work professionally in one or more of the following areas: analog electronics, digital electronics, communication systems, computer-based systems, or control systems.

3) Prepare graduates for personal and professional success with awareness of and commitment to their ethical and social

responsibilities, both as individuals and in team environments.

4) Prepare graduates who are capable of entering and succeeding in an advanced degree program in a field such as engineering, science, or business.

**Program Description.** Since electrical instrumentation is at the heart of modern science and technology, electrical engineers are employed not only in the computer, electronics, communications, and power industries, but also in diverse enterprises such as transportation, the chemical industry, large hospitals, and government laboratories.

The curriculum emphasizes the scientific basis of electrical engineering and the application of mathematical analysis to engineering problems. Work is required in network and systems theory, atomic physics and solid state, electromagnetic theory, and electronics. Creative use of scientific principles in problems of engineering design is stressed, particularly in the senior year. The development of computer hardware and software is a part of many electrical engineering courses.

Extensive laboratory work serves to bridge the gap between mathematical analysis and the real world of "hardware." Separate undergraduate laboratories are available for electrical measurements, analog electronics, digital electronics, microprocessors, control systems, optics, communications, and electronic materials.

Electrical engineering students should note that the four-year electrical engineering curriculum allows for three credits of completely free electives that do not have to satisfy any of the general education requirements. Although the natural science requirement will be satisfied automatically by courses specified in the electrical engineering curriculum, it is recommended that students take some additional courses in mathematics or physics for which the prerequisites have been satisfied.

To transfer from University College to the College of Engineering's electrical engineering program, students must have completed *all* science, mathematics, and

engineering courses required during the first two semesters with a grade point average of 2.00 or better.

### Minimum Requirements

*Humanities and Social Sciences* (27 credits): see the general education requirements for the University. Two courses in English Communication (C,Cw) (at least one writing course), two courses in Fine Arts and Literature (A), two courses in Letters (L), two courses in Social Sciences (S) (one is ECN 201), one course in Foreign Language or Cross-Cultural Competence (FC).

*Mathematics* (14–17 credits): MTH 141, 142, 243, 362, 451.

*Basic Sciences* (19 credits): CHM 101, 102; PHY 203, 273, 204, 274, 205, 275, 306.

*Computer Science* (4 credits): CSC 200.

*Technical Elective* (3–4 credits): Chosen from ELE 305, 325, IME 404, 412, MTH 215, 244, or any 300- to 500-level mathematics course except MTH 381, or an additional electrical engineering design elective.

*Engineering Sciences and Design* (58–63 credits): EGR 105, 106; ELE 201, 202, 205, 212, 215, 306, 313, 314, 322, 331, 342, 343, 400, 480, 481; IME 411, four electrical engineering design electives (chosen from BME 464/465; ELE 401, 405, 408, 423, 427, 432, 436, 437, 438, 444, 447, 457, 458, 489; two of these courses must be chosen from ELE 405, 408, 427, 436, 444, 447, 458, or 489).

*Free Elective:* (3 credits): Any course may be used as a free elective.

The major requires 131–134 credits.

### Freshman Year

*First semester: 16 credits*

EGR 105 (1); CHM 101 (3), 102 (1); MTH 141 (4); PHY 203 (3), 273 (1), and general education requirement (3).

*Second semester: 17 credits*

EGR 106 (2); ECN 201 (3); MTH 142 (4); PHY 204 (3), 274 (1), and CSC 200 (4).

### Sophomore Year

*First semester: 17 credits*

MTH 362 (3); PHY 205 (3), 275 (1); ELE 201 (3), 202 (1), and general education requirements (6).

*Second semester: 17 credits*

ELE 205 (3), 212 (3), 215 (2); MTH 243 (3); PHY 306 (3), and general education requirement (3).

### Junior Year

*First semester: 16 credits*

ELE 313 (3), 331 (3), 342 (4); MTH 451 (3) or IME 411 (3), and general education requirement (3).

*Second semester: 17 credits*

ELE 306 (4), 314 (3), 322 (3), 343 (4), and general education requirement (3).

### Senior Year<sup>7</sup>

*Total credits for two semesters: 31–34*

ELE 400 (1), 480 (2), 481 (2), technical elective<sup>8</sup> (3–4), general education requirements (6), free elective (3), and four electrical engineering design electives<sup>9</sup> (14–16).

**Minor in Electrical Engineering.** Students who are interested in pursuing a minor in electrical engineering are encouraged to speak with the department chair to discuss course requirements.

## Industrial Engineering

The Department of Industrial and Systems Engineering offers an ABET, Inc.-accredited curriculum leading to the Bachelor of Science (B.S.) degree in industrial engineering. The department also offers the Master of Science (M.S.) degree in manufacturing systems engineering and the Doctor of Philosophy (Ph.D.) in industrial and manufacturing engineering. In collaboration with the College of Business Administration, qualified students could choose to pursue a Master of Business Administration (M.B.A.) degree that will take one extra year following their completion of the B.S. in industrial engineering.

**Faculty:** Professor Wang, *chair*. Professors Dewhurst, Knight, and Sodhi; Assistant Professor Maier-Speredelozzi; Adjunct Professors Jones and Miller; Professors Emeriti Boothroyd and Nichols; Associate Professor Emeritus Shao.

**Program Mission Statement.** Consistent with the mission of the Department of Industrial and Systems Engineering, URI's B.S. program in industrial engineering will prepare students for successful careers that require a foundation of technical ability, high ethical standards, and good communication skills.

**Program Educational Objectives.** Graduates of the industrial engineering program will be:

1) Prepared to practice professionally in the fields of industrial engineering for both manufacturing and service sectors, and able to work in a wide range of areas such as systems engineering, quality engineering, logistics, management engineering, human factors, health care, and transportation.

2) Equipped with a foundation of technical ability, high ethical standards, and good communication skills for success in their future careers.

3) Prepared to successfully pursue advanced degrees through an environment that values both scholarly research and technical education.

**Curriculum Objectives.** Consistent with these program objectives, it is expected that graduates from the Bachelor of Science in Industrial Engineering will have:

1) appropriate fundamental understanding of mathematics, physics, chemistry and other basic sciences;

2) basic computer skills consistent with application to industrial engineering problem solving;

3) basic engineering knowledge across a range of subjects including mechanics, materials, thermodynamics, and electrical circuits;

4) understanding of basic economics and accounting, together with approaches to economics based decision-making;

5) thorough grounding in probability and statistics as applied to industrial engineering problems;

6) practice in designing, developing, and analyzing integrated systems that involve people, materials, equipment, and energy;

7) knowledge of basic manufacturing processes and the relationship between product design and manufacturing efficiency;

8) advanced knowledge in student-selected topics in industrial engineering, manufacturing engineering, and other related disciplines;

9) experience with individual and team-based engineering problem solving;

10) practical and hands-on experience solving engineering problems involving measuring physical phenomena and interpreting results;

11) understanding of ethics of engineering activities;

12) understanding of the relationships between engineering and society in general;

13) understanding of the necessity for lifelong learning;

14) well-developed written communication skills and experiences of oral communications both individually and in groups; and

15) broad understanding of society in general by exposure to fine arts, literature, history, philosophy, social science, and foreign cultures.

**Program Curriculum.** The industrial engineering curriculum is designed to provide significant strength in mathematics, basic science, and engineering science, together with a carefully coordinated set of courses of particular importance to the professional industrial or systems engineer. Mathematical and computer modeling of production systems, fundamental manufacturing processes, economics and statistics, and product design for manufacturability are included.

The major requires 129–130 credits.

#### *Freshman Year*

##### *First semester: 16 credits*

CHM 101 (3), 102 (1); PHY 203 (3), 273 (1); EGR 105 (1); MTH 141 (4), and general education requirement (3).

##### *Second semester: 16 credits*

ECN 201 (3); EGR 106 (2); MTH 142 (4); PHY 204 (3), 274 (1), and general education requirement (3).

#### *Sophomore Year*

##### *First semester: 16 credits*

ECN 202 (3); IME 240 (3), 241 (1), 325 (3); MCE 262 (3); MTH 243 (3).

##### *Second semester: 18 credits*

CVE 220 (3); ELE 220 (3); IME 220 (3); MCE 263 (3); MTH 362 (3), and basic science elective<sup>10</sup> (3).

#### *Junior Year*

##### *First semester: 18–19 credits*

CHE 333 (3); IME 404 (3), 411 (3), 432 (3); MCE 341 (3) or PHY 205 (3), and PHY 275 (1), and free elective (3).

##### *Second semester: 15 credits*

BUS 201 or 303 (3); IME 412 (3), 433 (3), 392 (3), and EGR 316 (3).

#### *Senior Year*

##### *First semester: 15 credits*

IME 451 (3), 449 (3), professional elective (3), and general education requirements (6).

##### *Second semester: 15 credits*

IME 452 (3), professional electives (6), and general education requirements (6).

General education (indicated in several places above) refers to the electives in the University's general education program, required in all curriculums leading to a bachelor's degree.

## Mechanical Engineering

The Department of Mechanical Engineering and Applied Mechanics offers a curriculum leading to the B.S. degree in mechanical engineering and, in cooperation with the Department of Ocean Engineering, a curriculum leading to the B.S. degree in mechanical engineering with an ocean engineering option. The B.S. degree in mechanical engineering is accredited by ABET, Inc. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in mechanical engineering and applied mechanics.

**Faculty:** Professor Shukla, *chair*. Professors Datseris, Faghri, Ghonem, Jouaneh, T. Kim, Lessmann, Palm, Sadd, Taggart, and Zhang; Associate Professors Chelidze, Meyer, and Rousseau; Adjunct Associate Professor Tucker; Adjunct Assistant Professor Gómez.

### Department Mission and Program Objectives

**Objectives.** URI's Mechanical Engineering department fully follows the college's mission statement. The University's mechanical engineering program is more than just a collection of courses and credit hours; it has been carefully designed to prepare students for the profession of mechanical engineering through study, experience, and practice. Although strong educational objectives existed in the program for many years, the department recently carefully reviewed and redeveloped its objectives and outcomes.

**Program Educational Objectives.** These are related to career and professional accomplishments that the program prepares students to achieve after graduation.

1) Produce graduates who are able to successfully practice mechanical engineering to serve state, local, national, and international industries and government agencies.

2) Produce graduates with the necessary background and technical skills to work professionally as individuals or in teams in the two major stems of mechanical engineering including mechanical and thermal systems.

3) Prepare graduates for personal and professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

4) Prepare graduates to be interested, motivated, and capable of pursuing continued lifelong learning through further graduate education, short courses, or other training programs in engineering or related fields.

**Desired Program Outcomes.** Mechanical engineering students demonstrate knowledge in all the outcomes required by ABET, Inc. and listed in the College of Engineering's description. Additionally, a significant portion of mechanical engineering graduates (approximately 20%) will have earned a B.A. in a foreign language through the International Engineering Programs in German, French, Spanish, or Chinese.

The curriculum provides a thorough and well-rounded foundation in basic science, mathematics, engineering science, and general education to prepare the graduate for a professional engineering career. The curriculum is also excellent preparation for graduate school. The program is strong in providing a background in design, solid and fluid mechanics, systems engineering, and the thermal sciences, including energy and energy transfer. Computer applications are stressed throughout the curriculum. All undergraduates are invited and encouraged to join the student section of the American Society of Mechanical Engineers, which sponsors industrial plant visits, special lectures, and other activities. Students may also join chapters of the Society of Automotive Engineers and the Society for Experimental Mechanics.

The work in the first two years consists of basic courses in science (math, physics, chemistry), applied science (mechanics, electricity and magnetism, basic computer literacy and computer-aided problem solving), and general education requirements (humanities, social sciences, English communication). A pair of introductory engineering courses are included in the freshman year.

The junior year concentrates on fundamental courses in mechanical engineering (thermodynamics, fluid mechanics, systems engineering, engineering analysis), materials sciences, and design of machines. Further general education studies are also covered.

The senior year in mechanical engineering includes heat transfer, manufacturing processes, mechanical systems design, thermal systems design, and a wide variety of professional electives such as mechanical control systems, advanced fluid mechanics, advanced mechanics of materials, microprocessor applications, internal combustion engines, alternate energy systems including solar and wind energy, power plants, air conditioning, heating and ventilation, vibrations, finite element method, and experimental stress analysis. The program also includes three laboratory courses in the junior and senior years, which introduce experimental techniques and provide practical experience with the engineering phenomena covered in the classroom.

Computer techniques are integrated throughout the curriculum. Computational facilities including personal computers and workstations are available in the College of Engineering's Computer Center and the University's Office of Information Services. The department's computer classroom provides state-of-the-art hardware and software for simulation, design, and product development.

To receive the Bachelor of Science degree in mechanical engineering, the student must satisfactorily complete all the courses in the following curriculum, which requires 129 credits.

#### Freshman Year

*First semester: 16 credits*

CHM 101 (3), 102 (1); EGR 105 (1); MTH 141 (4); PHY 203 (3), 273 (1), and a general education requirement (3).

*Second semester: 16 credits*

ECN 201 (3); EGR 106 (2); MTH 142 (4); PHY 204 (3), 274 (1) and a general education requirement (3).

**Sophomore Year****First semester: 16 credits**

MCE 201 (3), 262 (3); MTH 243 (3); PHY 205 (3), 275 (1), and IME 240 (3).

**Second semester: 15 credits**

CVE 220 (3); ELE 220 (3); MCE 263 (3); MTH 244 (3), and general education requirement (3).

**Junior Year****First semester: 18 credits**

EGR 316 (3); CHE 333 (3); MCE 301 (3), 341 (3), 354 (3), and 372 (3).

**Second semester: 18 credits**

MCE 302 (3), 313 (3), 366 (3), 448 (3), and general education requirements (6).

**Senior Year****First semester: 15 credits**

MCE 401 [**capstone**] (3), 414 (3), professional electives<sup>11</sup> (6), and general education requirement (3).

**Second semester: 15 credits**

MCE 402 [**capstone**] (3), professional electives<sup>11</sup> (6), free elective (3), and general education requirement (3).

**Mechanical Engineering with an Ocean Engineering Option.** Students enrolled in this curriculum follow the mechanical engineering program above for their freshman and sophomore years, and then the following curriculum.

This major requires 130 credits.

**Junior Year****First semester: 15 credits**

CHE 333 (3); MCE 301 (3), 341 (3), 354 (3), and 372 (3).

**Second semester: 19 credits**

MCE 302 (3), 366 (3), 448 (3); OCE 307 (3), 311 (4), and OCG 451 (3).

**Senior Year****First semester: 15 credits**

EGR 316 (3); MCE 401 [**capstone**] (3), ocean engineering elective<sup>12</sup> (3), and general education requirements (6).

**Second semester: 18 credits**

MCE 402 [**capstone**] (3), OCE 471 (3), professional elective<sup>13</sup> (3), free elective (3), and general education requirements (6).

## Ocean Engineering

The Department of Ocean Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in ocean engineering; this program is accredited by ABET, Inc. and is open to qualified students under the New England Regional Student Program. URI's Department of Ocean Engineering is nationally and internationally recognized as one of the leaders in ocean engineering, and also offers Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

**Faculty:** Professor Grilli, *chairperson*.

Professors Hu, Miller, Moran, Spaulding, Stepanishen, and Tyce; Associate Professor Baxter; Assistant Professor Roman; Assistant Research Professors Grilli and Potty; Adjunct Professors Corriveau, Muench, and Shonting; Adjunct Associate Professor Vincent; Adjunct Assistant Professors Cousins and Newman; Professors Emeriti Kowalski, Middleton, Silva, and Sheets.

**Department Mission Statement and Educational Objectives.** The Department of Ocean Engineering's missions are to provide high-quality undergraduate and graduate degree programs that prepare our students for professional careers in ocean engineering in industry, academia, and government; to develop and maintain internationally recognized research programs in selected areas of ocean engineering; to actively serve the profession and community in our areas of expertise; and to provide a challenging work and learning environment where diversity, community, scholarship, professional development, and excellence are valued and rewarded. The program is designed to provide students with a strong base in fundamental sciences, mathematics, and engineering; a broad base in ocean engineering; opportunities for the integration of theory, experimentation, and design; appreciation of ethical, social, and environmental issues in the practice of

the profession; and strong oral and written communication skills.

**Program Educational Objectives.** The educational objectives for the ocean engineering B.S. program have been developed in consultation with the department's advisory board, alumni, graduate employers, and students. Graduates are prepared to:

1) Gain employment with private or government organizations and advance to positions of increased responsibility, or pursue an advanced degree in an engineering program.

2) Work in one of the specialty areas within the broad field of ocean engineering including ocean instrumentation, hydrostatics, ocean waves, underwater acoustics, marine structures, marine geomechanics, and ocean engineering design.

3) Behave ethically, contribute to society, participate in strengthening a diverse engineering professional environment, and succeed in diverse workplaces, nationally and internationally.

URI's curriculum provides a basic ocean engineering program that gives students a firm base in engineering fundamentals and prepares them for direct entry into a professional career or continued study toward a graduate degree. The required ocean engineering courses begin at the freshman level and include laboratory, analysis, and design courses. There is a strong emphasis on the application of scientific principles in the ocean environment gained through laboratory courses. Experiments covering several basic areas are employed and provide an integrated approach to investigations into ocean phenomena and processes. Students are involved in the planning and execution of experiments, including collection and analysis of data and the reporting of results. This hands-on experience provides graduates with an understanding of ocean engineering activities in scientific and industrial fields. Two ocean engineering professional elective courses are also required.

The broad-based program exposes students to the following topics: ocean instrumentation and data analysis, underwater and sub-bottom acoustics, marine

hydrodynamics, coastal and near shore processes, marine geomechanics, coastal and offshore structures, and corrosion.

To ensure that each student gains an in-depth knowledge of one of the ocean engineering disciplines, the curriculum allows sequences of courses in hydrodynamics, structures, geomechanics, acoustics, instrumentation, and data analysis. An Ocean Systems Design Project course in the senior year integrates previously obtained knowledge in a comprehensive design project. This experience may be obtained through an on-campus course, by participating in an ongoing research project, or through an off-campus internship in an ocean-oriented private company or government laboratory; this internship allows interested students to take advantage of the many opportunities available in the region.

The Department of Ocean Engineering is located at the University's Narragansett Bay Campus. Computational facilities include personal computer and workstation rooms networked and connected to the Engineering Computer Laboratory and Office of Information Services. Extensive laboratory facilities are also available. The department often utilizes an 80-foot research vessel equipped with a fully integrated side-scan

sonar and sub-bottom mapping system; this vessel is used for both lab courses and research. A remotely-operated vehicle is operated by the department. A 100-foot tow and wave tank and a large acoustics tank are located on the Bay Campus, as well as an electronics shop, machine shop, and the Marine Geomechanics Laboratory. These facilities are available to undergraduates for course work, research, and independent study.

This major requires 130 credits.

#### Freshman Year

##### First semester: 16 credits

CHM 101 (3), 102 (1); EGR 105 (1); MTH 141 (4); PHY 203 (3), 273 (1); and general education elective (3).

##### Second semester: 17 credits

ECN 201 (3); EGR 106 (2); MTH 142 (4); OCE 101 (1); PHY 204 (3), 274 (1); and general education requirements (3).

#### Sophomore Year

##### First semester: 17 credits

MCE 262 (3); MTH 243 (3); OCE 205 (3), 215 (1); PHY 205 (3), 275 (1); and general education elective (3).

#### Second semester: 16 credits

CVE 220 (3); MCE 263 (3); MTH 244 (3); OCE 206 (3), 216 (1); and free elective (3).

#### Junior Year

##### First semester: 16 credits

MCE 354 (3); OCE 301 (4), 310 (3); professional elective<sup>15</sup> (3), and general education elective (3).

#### Second semester: 16 credits

EGR 316 (3); OCE 307 (3), 311 (4), 471 (3); and general education elective (3).

#### Senior Year

##### First semester: 17 credits

OCE 416 (2), 421 (3), 495<sup>14</sup> (3); CHE 333 (3); general education elective (3), and professional elective<sup>15</sup> (3).

#### Second semester: 15 credits

OCE 496<sup>14</sup> (3); OCG 451 (3), professional electives<sup>15</sup> (6), and general education elective (3).

<sup>1</sup> Engineering electives for this curriculum may be chosen from any two of the following: CHE 333, 347, 574; CVE 220, 374; ELE 331, 423; IME 404, 411, 412; MCE 323, 341, or 354. At least one course must be outside ELE.

<sup>2</sup> Electrical engineering design electives may be chosen from any two of the following: ELE 401, 405, 408, 427, 432, 436, 437, 438, 444, 447, 457, or 458.

<sup>3</sup> A mathematics elective is MTH 215, or any 300- to 500-level mathematics course except MTH 381. MTH 451 is recommended as a mathematics elective.

<sup>4</sup> CHM 191, 192 (10 credits) may be substituted for CHM 101, 102, 112, and 114 (8 credits).

<sup>5</sup> The elective must meet accreditation requirements. OCG 451 is required for chemical and ocean engineering majors.

<sup>6</sup> Computer engineering electives—nine or more credits from the following courses: BME 464/465; any ELE 300- or 400-level course not otherwise required by the major, any ELE 500-level course with petition, and CSC 301, 305, 402, 406, 415, 436, 481.

<sup>7</sup> See your advisor for help in preparing a suitable senior-year program.

<sup>8</sup> A technical elective for this curriculum is one of the following courses: ELE 305, 325; IME 404, 412; MTH 215, 244, or any 300- to 500-level mathematics course except MTH 381, or an additional electrical engineering design elective.

<sup>9</sup> Electrical engineering design electives may be chosen as any four of the following: BME 464/465; ELE 401, 405, 408, 423, 427, 432, 436, 437, 438, 444, 447, 457, 458, 489. However, two of the courses must be chosen from ELE 408, 427, 436, 444, 447, 458, or 489.

<sup>10</sup> Any course for which the prerequisite is met by CHM 101, including PHY 205, 223, and 275; any physics course at or above the 300 level; or any course in astronomy, biochemistry, biology, botany, geology, microbiology, or zoology. Any other course must be approved by an advisor.

<sup>11</sup> Professional electives must be satisfied by a minimum of three three-credit elective courses in mechanical engineering, two of which must be taken at URI. The fourth course may be a 300-, 400-, or 500-level course offered by: the College

of Engineering; or the Departments of Chemistry, Computer Science and Statistics, or Physics; or the Department of Mathematics (one 400- or 500-level course). Professional elective courses taken outside URI are subject to URI rules on transfer credit and require prior written approval.

<sup>12</sup> One course must be selected from OCE 421, 495, 510, 522, 534, or 561.

<sup>13</sup> May be satisfied by any 400-level mechanical engineering course.

<sup>14</sup> An approved off-campus experience, usually between the junior and senior years, can be substituted for OCE 495 and 496.

<sup>15</sup> The requirement for professional electives must be satisfied by a minimum of two approved three-credit elective courses at the 300-, 400-, or 500-level in engineering or oceanography and two approved three-credit courses in ocean engineering.

## COLLEGE OF THE ENVIRONMENT AND LIFE SCIENCES

Jeffrey R. Seemann, *Dean*

Dennis W. Nixon, *Associate Dean*

Richard C. Rhodes III, *Associate Dean*

The College of the Environment and Life Sciences (CELS) offers undergraduate majors leading to three degrees: the Bachelor of Science (B.S.), the Bachelor of Arts (B.A.), and the Bachelor of Landscape Architecture (B.L.A.). The following majors are offered within the B.S. degree program: animal science and technology, aquaculture and fisheries technology, biological sciences, clinical laboratory science, environmental economics and management, environmental horticulture and turfgrass management, environmental science and management, geology and geological oceanography, geosciences, marine affairs, marine biology, microbiology, nutrition and dietetics, resource economics and commerce, and wildlife and conservation biology. Students may also obtain a B.A. in biology or marine affairs, or a B.L.A. in landscape architecture.

Options have been developed within certain majors to help students prepare for graduate study, professional training, or specialized careers. Entering freshmen and transfer students with fewer than 24 credits are admitted to University College and may choose a major in the College of the Environment and Life Sciences at that time.

Undergraduate students from any college may develop a minor from one of the majors offered by the College of the Environment and Life Sciences. Details can be worked out with an appropriate faculty advisor. In addition, most departments have an internship program for combining hands-on professional experience with academic credit.

CELS encourages students in all majors to pursue opportunities such as undergraduate research fellowships, internships, apprenticeships, and field studies that will complement their formal classroom learning.

The Department of Community Planning and Landscape Architecture offers a minor in community planning, which is described on page 36.

### Faculty

Many faculty members hold a joint appointment with the Rhode Island Agricultural Experiment Service and the Rhode Island Cooperative Extension. These units represent the formal research and public service functions of the college and are funded with federal and state monies.

**Biological Sciences:** Professor Goldsmith, *chairperson*. Professors Bibb, Bullock, Heppner, Kass-Simon, Killingbeck, Koske, A. Roberts, and Webb; Associate Professors Katz, Norris, and Wilga; Assistant Professors Irvine, Preisser, Seibel, and Thornber; Adjunct Professors Carleton, Deacutis, Fogarty, Lauder, Sanford, and S. Smith; Adjunct Associate Professors Cromarty, Gemma, and Thursby; Professors Emeriti Albert, Beckman, Caroselli, Cobb, Costantino, Goertemiller, Goos, Hammen, Harlin, Hauke, Hylan, Lepper, and Twombly; Associate Professor Emeritus Krueger; Research Professor Hill.

**Cell and Molecular Biology:** Professor Sperry, *chairperson*. Professors Bradley, Chandee, P. Cohen, Goldsmith, Hufnagel, Kausch, Laux, D. Nelson, and Seemann; Associate Professors L. Martin, Mottinger, J.H. Norris, and G. Sun; Assistant Professors N. Howlett and B. Jenkins; Adjunct Professor Mehta; Adjunct Assistant Professors Bauer, Kaplan, and Luo; Professors Emeriti Cabelli, Carpenter, Hartman, Traxler, Tremblay, and Wood.

**Clinical Laboratory Science:** Clinical Professor Paquette, *director*. Adjunct Clinical Professors Allegra and Kenney; Adjunct Clinical Associate Professors Kessimian and Schwartz; Adjunct Clinical Assistant Professors Campbell, Gmuer, Goddu, Heelan, Ingersoll, Lewandowski, and Mello.

**Community Planning:** Professor Atash, *chairperson and program director*. Professor Feld; Associate Professors Feldman and Gordon. (Note: Admission to the Community Plan-

ning Program has been suspended effective June 30, 2005.)

**Environmental and Natural Resource Economics:** Professor J.L. Anderson, *chairperson*. Professors Gates, Grigalunas, Opaluch, Roheim, Sutinen, Swallow, and T. Tyrrell; Assistant Professors C. Anderson and Schnier; Adjunct Professors Edwards, Holland, Johnston, Mazzota, and Shogren.

**Fisheries, Animal and Veterinary Science:** Professor Bengtson, *chairperson*. Professors Bradley, Costa-Pierce, DeAlteris, Mallilo, Recksiek, Rhodes, and Rice; Associate Professor Gomez-Chiarri; Assistant Professors Petersson and Sartini; Lecturers Jones and Launer; Adjunct Professors Hoey, Klein-McPhee, Musik, and Smolowitz; Adjunct Associate Professors Colwill and Hare; Adjunct Assistant Professors Brumbaugh, Castro, Dudzinski, Hancock, Leavitt, Rheault, Schwartz, and Weatherbee; Adjunct Clinical Professor Serra; Professors Emeriti Chang, McCreight, Nippo, Wing, and Wolke.

**Nutrition and Food Sciences:** Professor English, *chairperson*. Professors Greene, C. Lee, and Patnoad; Associate Professors Fey-Yensan and Gerber; Assistant Professor Melanson; Adjunct Associate Professor Sebelia; Adjunct Assistant Professor Pivarnik; Professors Emeriti Caldwell, Constantinides, and Rand; Instructor Handley.

**Geosciences:** Associate Professor Veeger, *chairperson*. Professors Boothroyd, Cain, Fastovsky, Hermes, and Murray; Associate Professor Boving; Assistant Professor Savage; Adjunct Professors Burks, Fischer, Hapke, Pockalny, and Spiegelman.

**Geology and Geological Oceanography:** Associate Professor Veeger, *undergraduate advisor*. The faculty consists of the members of the Department of Geosciences and the marine geology and geophysics faculty of the Graduate School of Oceanography.

**Landscape Architecture:** Associate Professor Green, *director*. Professor Simeoni; Associate Professor Sheridan; Adjunct Assistant Professors Bourbonnais and Weygand; Professor Emeritus Hanson.

*Marine Affairs:* Professor Juda, *chairperson*. Professors Burroughs, Marti, and D. Nixon; Assistant Professors Dalton, Macinko, and Thompson; Professors Emeriti Alexander, Knauss, and West; Associate Professor Emeritus Krausse.

*Natural Resources Science:* Professor Paton, *chairperson*. Professors Amador, August, Forrester, Gold, Golet, Husband, and Wang; Associate Professors McWilliams and Stolt; Assistant Professors F. Meyerson and L. Meyerson; Adjunct Professors Paul and Perez; Adjunct Associate Professors Abedon, Cerrato, Gorres, Groffman, Nowicki, O'Connell, Reed, and Rockwell; Adjunct Assistant Professors Augeri, Dabek, Hollister, Jarecki, Kellogg, Lashomb, McKinney, Milstead, Peters, Rubinstein, Saltonstall, Steele, and Tefft; Professors Emeriti Brown and Wright.

*Plant Sciences:* Professor Alm, *chairperson*. Professors Casagrande, LeBrun, Mather, Maynard, Ruemmele, and Sullivan; Associate Professor Englander; Assistant Professors Adkins, Brown, and Mitkowski; Professor-in-Residence Ginsberg; Adjunct Assistant Professors Dellaporta, Gettman, and Gordon; Professors Emeriti Beckman, Hull, Jackson, McGuire, and Mueller; Associate Professor Emeritus Krul; Adjunct Professor Emeritus Taylorson.

## Curriculum Requirements for Majors

**Bachelor of Arts.** Students who pursue the B.A. in marine affairs or biology must fulfill the Basic Liberal Studies requirements of the College of Arts and Sciences (see page 50). Also see the listings under biology and marine affairs in this section.

**Bachelor of Science.** Most of the college's B.S. programs require a minimum of 130 credits for graduation, except when specified otherwise under the program description. Required courses come from three categories: general education requirements (36 credits); program requirements (77–85 credits); and free electives (6–12 credits).

The following outline gives the basic general education requirements for all

students in the B.S. curriculum within the college. Individual programs may require that specific courses be selected.

*English Communication* (6 credits): three credits in written communication from courses in Group Cw, and three credits in oral communication from communication studies.

*Mathematics* (3 credits)

*Natural Sciences* (6 credits)

*Social Sciences* (6 credits)

In addition, 15 credits must be chosen from:

*Letters* (3–6 credits)

*Fine Arts and Literature* (3–6 credits)

*Foreign Language and Culture* (3–6 credits)

Total: 36 credits.

### Bachelor of Landscape Architecture.

For information on the curriculum requirements for URI's B.L.A. degree, see page 99.

## Animal Science and Technology

This major, offered by the Department of Fisheries, Animal and Veterinary Science, is designed for students interested in applied animal science careers. Options are available to students interested in veterinary medicine, animal sciences, and laboratory animal science. Those students who intend to use their study in animal science as credentials for secondary-school teaching should also enroll in this major.

The major requires a minimum of seven credits in introductory animal science and genetics, three in biology, eight in inorganic chemistry, and three in mathematics. Also required are nine to 12 credits in basic science, 24 credits of concentration courses, and 26–29 credits of supporting electives approved for the major.

**Animal Science Option.** This option includes animal nutrition, physiology, behavior, and disease. Students will normally emphasize one or more of these areas. A strong preparatory background in the basic sciences is needed. Students in this option seek employment in technical areas and/or

continue their studies in specialized graduate programs.

In addition to the requirements of the major, students choosing this option must complete the following basic science requirements: four to eight credits in organic chemistry, three in introductory calculus, and four in microbiology. A course in animal anatomy and physiology is required in the concentration. The remaining credit requirements will be selected from the concentration courses and supporting electives approved for this option.

**Animal Management Option.** Research techniques and procedures for animal care are emphasized along with a strong background in the sciences. Students with this training and animal experience would be employed in research and teaching facilities as animal technicians, animal technologists, supervisors of animal technicians, and assistant research project leaders.

In addition to the requirements of the major, students must complete the following basic science requirements: four to eight credits in organic chemistry, three in introductory calculus, four in microbiology, and three in statistical methods. Six credits in animal management, three credits in animal anatomy and physiology, and three credits of general nutrition are required in the concentration. The remaining credits will be selected from the concentration courses and supporting electives approved for this option.

**Preveterinary Option.** This option requires a demonstrated capability in the basic sciences and prepares students for admission to veterinary schools offering the D.V.M. degree. Because admission requirements among schools are not totally uniform and are subject to change, students should determine specific requirements of the schools in which they are interested. Those who are not accepted for veterinary training will be well prepared to pursue graduate programs in animal physiology and health.

In addition to the requirements of the major, students must complete the following basic science requirements: eight-credit, two-semester sequence in organic

chemistry, three credits in biochemistry, four in microbiology, eight in general physics, three in introductory calculus, and three in intermediate calculus or statistical methods in research. Four credits in animal anatomy and physiology are required in the concentration. The remaining credits will be selected from the concentration courses and supporting electives approved for this option.

## Aquaculture and Fishery Technology

This major, offered by the Department of Fisheries, Animal and Veterinary Science (AFS), prepares students for professional or technical careers in aquaculture or fisheries-oriented occupations. It is sufficiently broad to allow for specialization in either fisheries or aquaculture science and technology. Students who demonstrate superior ability in the basic sciences and wish to continue their professional training can select a course curriculum that will both prepare them for graduate school and provide a broad overview in fisheries and aquaculture science and technology.

The major requires a minimum of twelve credits in introductory professional courses including natural resource conservation, fisheries or aquaculture, and resource economics; six to eight credits in animal and plant biology; four credits in general chemistry; four additional credits in general or organic chemistry; and nine to twelve additional credits in basic science selected from an approved course list in the departments of Biological Sciences, Chemistry, Computer Science and Statistics, Mathematics, and Physics. In addition, the major requires 24 credits in concentration courses at the 300 level or above, and 18 credits of the concentration courses must be selected from courses offered by AFS. The additional six credits may be selected from courses offered in Biological Sciences; Fisheries, Animal and Veterinary Science; Nutrition and Food Sciences; Marine Affairs; Environmental and Natural Resource Economics; and by the Graduate School of Oceanography. Finally, the program requires 30–36 credits of supporting electives selected from an

approved list of courses in the departments of Biological Sciences (botany and zoology); Fisheries, Animal and Veterinary Science; Marine Affairs; Environmental and Natural Resource Economics; Natural Resources Science; and the Graduate School of Oceanography.

## Biology Biological Sciences Marine Biology

These programs are administered by the Department of Biological Sciences. A student may earn either the Bachelor of Arts (B.A.) degree in biology or the Bachelor of Science (B.S.) degree in biological sciences or marine biology. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in biological sciences.

### BACHELOR OF ARTS (BIOLOGY)

Students selecting a major in biology must complete a minimum of 28 credits (maximum 45 credits) in biological sciences including the following courses: BIO 101 and 102 (8), and MIC 201 or 211 (4). They must also complete a minimum of three credits from each of the three lists (A, B, and C) below. The remaining nine credits may be selected from courses in biology and/or microbiology. Students in this major must elect a year of chemistry with laboratories. Up to three credits of independent study or special topics in the following disciplines may be applied toward this bachelor's degree: AFS, AVS, BCH, BIO, MIC, NRS, and PLS.

*List A (Botanical): BIO 311, 321, 323, 332, 346, 348, 418, 432, 465. List B (Zoological): BIO 121, 201, 242, 244, 286, 301, 302, 304, 327, 329, 334, 335, 354, 355, 366, 385, 386, 441, 442, 445, 446, 467, 469, 475. List C (Combination of Botanical and Zoological): BIO 250, 262, 341, 345, 352, 353, 360, 396, 437, 451, 452, 453, 454, 455, 457, 458, 491, 491.*

Students in this major must fulfill the Basic Liberal Studies requirements of the College of Arts and Sciences. Students must

take either six credits of a modern foreign language or the study of a modern foreign language through the intermediate (104) level. The requirement for a modern foreign language is not met by study abroad or by a culture cluster.

Those wishing to prepare for a professional career in the life sciences should enroll in the B.S. program (description follows).

A total of 120 credits is required in the B.A. program. At least 42 credits must be in courses numbered 300 or above. Only three credits of 491, 492 may be used for biology elective.

### BACHELOR OF SCIENCE (BIOLOGICAL SCIENCES)

### BACHELOR OF SCIENCE (MARINE BIOLOGY)

These curricula provide a foundation in the fundamental principles of biology and marine biology, and are concerned with the application of biological science to problems of modern life. They also provide preparation for graduate work in biological fields including aquatic, environmental, and marine studies, molecular, cellular, and developmental biology, biological oceanography, genetics, and physiology, and preparation for admission to professional schools of medicine, dentistry, and veterinary medicine.

Students who know their professional goals are encouraged to declare a major as soon as possible to take advantage of help from department advisors. Students *must* declare their major when leaving University College.

**Biological Sciences.** A minimum of 35 credits in biology is required and must include BIO 101 and 102 (8). The remaining 27 credits must include at least one course from List A (Botanical) and one course from List B (Zoological). At least three laboratory courses beyond BIO 101 and 102 must be taken, excluding 491, 492, and 495. The 27 credits must include one course from at least four of the following six areas: Cell and Development (BIO 302, 311, 341, 453); Ecology and Evolution (BIO 250, 262);

Genetics (BIO 352); Molecular Biology (BIO 437); Organismal Diversity (BIO 304, 321, 323, 354, 366, 432, 465); Physiology (BIO 201, 242/244, 346).

In addition, students must take CHM 101, 102, 112, 114, 226, 227, 228 or 124, 126, and BCH 311; MIC 201 or 211; two semesters of introductory calculus or one semester of calculus and STA 308; PHY 111, 112, 185, and 186 or PHY 213, 214, 285, 286; WRT 104 or 105 and three additional credits of English communication, three credits of fine arts, three credits of literature; and either six credits of a modern foreign language, or study of a modern foreign language through the intermediate (104) level. The requirement for a modern foreign language is not met by study abroad or a culture cluster. Students must follow University requirements for general education; no area may be reduced.

Students are encouraged to become involved in the department's research activities by arranging to register for assigned work as Special Problems (491, 492). Only three credits of 491, 492 may be used toward the B.S. degree. Up to three credits of independent study or special topics in the following disciplines may be applied toward this bachelor's degree: AFS, AVS, BCH, BIO, MIC, NRS, and PLS.

*List A (Botanical):* BIO 311, 321, 323, 332, 346, 348, 418, 432, 465. *List B (Zoological):* BIO 121, 201, 242, 244, 302, 304, 327, 329, 334, 335, 354, 355, 366, 385, 386, 441, 442, 445, 446, 467, 469, 475. *List C (Combination of Botanical and Zoological):* BIO 205, 262, 341, 352, 353, 360, 396, 437, 451, 452, 453, 454, 455, 457, 458, 491, 492.

Students are strongly urged to consult the biological sciences advisors to obtain detailed programs of the various sub-disciplinary paths through the department most suited to their particular career goals.

A total of 130 credits is required for graduation.

**Marine Biology.** A minimum of 36 credits in biological sciences is required and must include BIO 101, 102, 130, and 360. Of the remaining 23 credits, 12 credits must

be earned by selecting one course from at least four of the following six areas: Cell and Developmental Biology (BIO 302, 311, 341, 453); Ecology and Evolution (BIO 250, 262); Genetics (BIO 352); Molecular Biology (BIO 437); Organismal Diversity (BIO 304, 321, 323, 354, 366, 432, 465); Physiology (BIO 201, 346). The remaining 11 credits must be selected from the following, with no more than three credits of Special Problems to be applied to this requirement: BIO 345, 355, 418, 441, 455, 457, 458, 465, 469, 475, 491, 492, 495, 563; OCG 420, 576. Up to three credits of independent study or special topics in the following disciplines may be applied toward this bachelor's degree: AFS, AVS, BCH, BIO, MIC, NRS, and PLS. Students must take at least three laboratory courses in biological sciences (BIO) in addition to BIO 101 and 102 and excluding BIO 491, 492, and 495.

In addition, the student must take CHM 101, 102, 112, 114, and either CHM 226, 227, and 228 or CHM 124, 126, and BCH 311; two semesters of introductory calculus or one semester of calculus and STA 308; OCG 401 or 451; PHY 111, 112, 185, 186; WRT 104 or 105 and three additional credits of English communication, three credits of fine arts, three credits of literature; and either six credits of a modern foreign language, or study of a modern foreign language through the intermediate (104) level. The requirement for a modern foreign language is not met by study abroad or by a culture cluster. Students must follow University requirements for general education; no area may be reduced.

A total of 130 credits is required for graduation.

### Clinical Laboratory Science and Biotechnology Manufacturing

This major, offered by the Department of Cell and Molecular Biology, is designed to prepare students for applied careers in the medical laboratory, biomedical, and biotechnology sciences, as well as to prepare students for graduate or professional school. The department also offers the Master of Science (M.S.) degree.

There are two options in the program: Clinical Laboratory Science and Biotechnology Manufacturing. Students in both are required to take these courses: BIO 101 and 102 or 104A and 104B, 121, and 242; CHM 101, 102, 112, 114, 226, 227, and 228 (or 124 and 126 for the Biotechnology option); PHY 111 and 185; MTH 111, 131, or 141; CSC 101 or 201; STA 307 or 309. A total of 130 credits are required for graduation.

#### Clinical Laboratory Science Option.

During the first three years, emphasis is on general education and on basic courses in the biological, chemical, and quantitative sciences. The courses of the senior year are taught off campus by staff from affiliated hospital schools of clinical laboratory science. These schools are accredited by the National Accreditation Agency for Clinical Laboratory Sciences. The senior year is an 11-month clinical internship that begins in late July. It is taken at one or more of the following clinical agencies: Rhode Island Hospital, Miriam Hospital, Fatima Hospital, and the Rhode Island Blood Center. The clinical program includes lecture and laboratory instruction in clinical chemistry, clinical microbiology, hematology, immunology, immunohematology, and molecular pathology, and prepares the student for national certification examinations and state licensure.

Applicants to this curriculum should have completed 60 credits and taken most of the required courses by the end of the sophomore year. Students are selected for clinical internships by the departmental curriculum committee and by program officials of the hospital schools. Since the number of students is limited, interested students should consult with the program director early in their college career, so they will be familiar with the requirements and application procedures. Flexibility in the curriculum permits students who are not admitted to the program to fulfill requirements for the Bachelor of Science degree in one of several other concentrations in the department. Students with a degree in a health profession, life science, or related field may apply to the clinical internship as a fifth year of study.

*Required courses:* MTC 102, 405, 406, 407, 409, 410, 411, 412, 413, 414, 415, 416, and 483; MIC 201 or 211, 333, 432; BCH 311 and 437.

#### *Freshman Year*

*First semester: 14–15 credits*

CHM 101, 102 (4); BIO 101 or 102 (4); MTH 111 or 131 (3) or 141 (4); and one general education requirement (3).

*Second semester: 16 credits*

CHM 112, 114 (4); BIO 101 or 102 (4); CSC 101 or 201 (4); MTC 102 (1); and one general education requirement (3).

#### *Sophomore Year*

*First semester: 18 credits*

BIO 121 (4); CHM 227 (3); PHY 111, 185 (4); MIC 211 or 201 (4); and general education requirements (3).

*Second semester: 17 credits*

BIO 242 (3); CHM 226, 228 (5); general education requirements (6) and free elective (3).

#### *Junior Year*

*First semester: 18 credits*

MIC 333 (3); MTC 483 (3); EDC 102 or 312 (3); and general education requirements (9).

*Second semester: 15 credits*

MIC 432 (3); BCH 311 (3); STA 307 or 308 (3); MGT 300 or 301 (3); and electives (3).

#### *Senior Year*

*First semester: 17 credits*

MTC 405 (2), 407 (2), 409 (4), 411 (4), 413 (2), and 415 (3).

*Second semester: 15 credits*

MTC 406 (2), 410 (4), 412 (4), 414 (2), and 416 (3).

#### **Biotechnology Manufacturing Option.**

This option is designed to prepare students for professional careers in the biotechnology and biomedical industries in the areas of manufacturing, processing, operations,

and technical support. This option is based at the Providence Campus and includes a 12-credit clinical internship at a regional biotechnology or biomedical company. Students should be aware that internships may be limited in number and are awarded on a competitive basis. Students are selected by the departmental curriculum committee and by program officials of affiliated companies. Students interested in this option should consult with the program director early in their college career, so that they will be familiar with the requirements and application procedures. Flexibility in the curriculum permits students who are not admitted to the program to fulfill requirements for the Bachelor of Science degree in one of several other concentrations in the department.

*Required courses:* MTC 195, 199; MIC 190 and 201 or 211; BCH 311, 437, and 453. The program is structured to provide intensive professional and clinical training in the first year of the program so the student may enter the professional field while still pursuing the degree. The remainder of the program may be completed on a full-time or reduced-time basis. The electives, in consultation with the program director and appropriate department officials, may be utilized to create personalized specializations and/or minors in management, training and development, information technology, bioengineering, and related areas. The recommended program for the first year is:

#### *Freshman Year*

*First Semester: 15–16 credits*

BIO 101 (4) or 104A (3); CHM 101 (3) and 102 (1); CSC 101 (4) or 201 (4); MIC 190 (3); and URI 101 (1).

*Second Semester: 16–18 credits*

BIO 102 (4) or 104B (3); CHM 124, 126 (4); MTH 111 (3) or 131 (3) or 141 (4); MTC 195 (3); WRT 333 (3).

*Summer Session: 12 credits*

MTC 199 (12)

## **Environmental Economics and Management**

This major prepares students for professional careers in the public and private sector that address environmental and natural resource management, business, or public policy. This interdisciplinary major is offered jointly by the Department of Environmental and Natural Resource Economics and the Department of Natural Resources Science. Students develop a foundation in both natural and social sciences to understand the interactions between human society and our natural or environmental resources. Environmental economics and management majors seek careers that address the interface between the economic system and the ecological or environmental systems. For example, economic incentives and values can drive individual decisions to use forest, land, water, or air resources, which can in turn cause ecosystem management problems. Public officials, nonprofit organizations, and private businesses need professionals to integrate the ecological and natural science with the economic science aspects of their organizations. Such professionals play an important role in coordinating an interdisciplinary team to address such complex problems. Graduates gain an understanding of both natural sciences and the economy.

The degree requires a minimum of 120 credit hours, including a minimum of 24 credit hours in the concentration credits for this interdisciplinary major. The program is designed as a blend of the existing majors of environmental science and management and resource economics and commerce. In addition to satisfying the general education requirements, students need nine credits in introductory professional courses, including natural resource conservation, introductory resource economics, and introductory soils. As part of the basic science requirements, majors must complete eight credits in biological sciences (four in general botany, four in general zoology); three credits in introductory ecology; four credits in introductory physics; four credits in physi-

cal geology; four credits each in organic and inorganic chemistry; three credits in introductory calculus; and three credits in introductory statistics. Within the 24-credit concentration, students are required to take two courses in forestry and wildlife and two courses in water and soil for a minimum of 12 credits in these natural sciences. A minimum of 12 concentration credits are required in environmental and resource economics (listed under Resource Economics, REN), including economics for environmental resource management and policy and economics of land and water resources, as well as two other courses selected according to the student's particular interests. The major also requires a minimum of nine credits in communication skills beyond the general education requirements. Finally, students may choose a minimum of 12 credits in supporting electives and six credits in free electives.

## Environmental Horticulture and Turfgrass Management

The major in environmental horticulture and turfgrass management, offered by the Department of Plant Sciences, is intended to educate students in the sciences, both natural and social, in preparation for professional careers in the many fields of environmental horticulture. Graduates of this program may pursue careers as landscape contractors, golf course superintendents, directors of park systems and arboreta, proprietors of garden centers and floral shops, plant propagators, nursery personnel, vegetable and fruit growers, managers of lawn service firms, horticultural therapists, and technical representatives for seed, equipment, and chemical companies, to name just a few of the opportunities available. Others may enter graduate school and pursue careers in research and education in both public and private institutions. This program has as its unifying theme the culture and use of plants that enhance the human environment.

URI's Department of Plant Sciences operates 50 acres of turfgrass, horticulture, and plant science research and educa-

tion farm centers. The C. Richard Skogley Turfgrass Center is the oldest turfgrass research and teaching program in the U.S. Also included in the department's facilities are five research laboratories, controlled environment facilities, a greenhouse complex, and a biotechnology initiative for hands-on opportunities. The department is closely allied with the URI Botanical Gardens and E.P. Christopher Arboretum.

Depending on the area of specialization, graduates can meet the standards of several certification organizations. Environmental horticulture students qualify for certification with the Rhode Island Nursery and Landscape Association and International Society for Arboriculture. Graduates specializing in turfgrass management qualify for certification as turfgrass managers or turfgrass specialists with the American Registry of Certified Professionals in Agronomy, Crops, and Soils, Ltd. of the American Society of Agronomy. These same graduates also meet the requirements for registration with the Golf Course Superintendents Association of America.

The major requires 24 credits of preprofessional natural science courses, including six in general education; 40 credits in concentration courses; and 18 credits of supporting electives selected from an approved course list, with permission of the advisor. Included among these electives are business and management courses, as well as advanced offerings in plant science, botany, and soil science. Many students minor in business management.

## Environmental Science and Management

The major in environmental science and management, offered by the Department of Natural Resources Science, prepares undergraduate students for professional careers in the public and private sectors of natural resources management. Flexible course requirements allow students to develop individual areas of concentration and prepare for a variety of positions in environmental management after graduation. This major is also suitable for students

who wish to become certified as teachers of environmental science and natural resources at the secondary level. In addition, the program provides a solid background for graduate study in several more specialized environmental science disciplines. Environmental science majors may meet the educational requirements for state and federal employment as biologists, natural resource specialists, environmental scientists, and other classifications.

The major requires 13 credits of professional courses, which include natural resource conservation, seminar in natural resources, resource economics, introductory soil science, and conservation of populations and ecosystems. As part of the basic science requirements, environmental science and management majors must complete six to eight credits in introductory biological sciences; three credits in introductory ecology; four credits in introductory physics; four credits in physical geology; three to four credits in introductory biochemistry, introductory microbiology, or geomorphology; eight credits in introductory chemistry; four credits in organic chemistry; three credits in introductory calculus; and three credits in introductory statistics. Required concentration courses (26 credits) must be taken at the 300 level or above; at least 21 credits must be selected from courses offered by the Department of Natural Resources Science.

In addition, one course must be selected from each of the following groups: biological and ecological science; watershed and environmental quality; methods in environmental science; natural resources management; and land use management. These and the remaining concentration credits should be selected from courses offered by the Department of Natural Resources Science or from an approved list of courses; at least nine credits must be selected from NRS courses. Supporting electives (18–21 credits) must be selected from an approved list of courses, mostly at the 300 and 400 levels. Up to 24 credits of experiential learning courses may be taken toward satisfying concentration (letter grade courses only) and supporting elective requirements. NRS

402, 403, 423, 425, 450, 452, 522, and 524 are the **capstone** experiences in this major.

## Geology and Geological Oceanography

This major, offered by the Department of Geosciences and the Graduate School of Oceanography, includes a comprehensive background in geology and a solid introduction to geological oceanography. The curriculum includes the full set of chemistry, physics, biology, and mathematics courses required for a B.S. in geosciences (see below). Students in the program will be advised jointly by geosciences and oceanography faculty members.

A senior research project will be taken in the Graduate School of Oceanography (GSO) as OCG 493 or 494 [capstones], under the direction of a GSO faculty member. Three courses in oceanography—OCG 401 or 451, 540, and one additional OCG course at the 400 level or above selected by the student in conjunction with the advisor—will provide the student with a good overview of his or her intended field, and also relieve the student of two required courses if he or she continues on to study oceanography at the graduate level at the University of Rhode Island. In addition to this, the student may find opportunities for summer employment or participation in oceanographic research cruises after his or her junior year.

Students completing this program of study will be well prepared to pursue careers in either conventional geology or geological oceanography. Technical positions in private or government oceanographic laboratories are available for geological oceanographers with bachelor's degrees. Students who pursue graduate studies can expect to find a high demand for geological oceanographers with advanced degrees. Students entering the URI Graduate School of Oceanography from this program will have a significant head start compared with those entering from most other undergraduate institutions.

The following core courses are required: GEO 103 (4), 204 (4), 210 (4), 320 (4), 370 (4), 450 (4), 483 (4), either an approved summer field camp (GEO 480 [capstone]) for a four to six credits or an approved field experience (prior approval required), two approved geosciences electives (at the 200-level or above); OCG 401 (3) or 451 (3), OCG 540 (3), OCG 493 or 494 [capstones] (3); and one additional OCG course at the 400 level or above. Students must also take the following supporting course work: MTH 131 (3) or 141 (4); MTH 132 (3) or 142 (4); BIO 101 (4) and 102 (4); CHM 101 (3), 102 (1) and 112 (3), 114 (1); CSC 201 (4) or STA 308 (3); PHY 111 (3), 185 (1) or 213, 285 (4); and PHY 112 (3), 186 (1) or 214, 286 (4).

A total of 126 credits is required for graduation.

## Geosciences

The major in geosciences, offered by the Department of Geosciences, is designed as a foundation for careers in the earth sciences. The federal government identifies GEO 204, 210, 320, 370, 450, and supporting sciences as a minimum background for geologists. Students in this program elect one of the following three options: environmental geology, sedimentary geology, or petrology/tectonics. These options offer preparation for further work in areas such as environmental geology, mineral and energy resources, hydrogeology, sedimentology, coastal geology, igneous and metamorphic petrology, geochemistry, structural geology, and tectonics.

Students interested in teaching earth science should contact the University's Department of Geosciences for details about a cooperative program with the Department of Education.

All B.S. majors are required to complete the following geosciences courses: 103 (4), 204 (4), 210 (4), 320 (4), 370 (4), 450 (4), 483 (4), two courses within one of the options listed below, two additional approved geosciences electives (at the 200-level or

above), and either an approved summer field camp (GEO 480 [capstone]) for four to six credits or an approved field experience (prior approval required). The field camp is normally taken following the junior year. Students must also take the following supporting course work: MTH 131 (3) or 141 (4); MTH 132 (3) or 142 (4); BIO 101 (4) and 102 (4); CHM 101 (3), 102 (1) and 112 (3), 114 (1); CSC 201 (4) or STA 308 (3); PHY 111 (3), 185 (1) or 213, 285 (4); and PHY 112 (3), 186 (1) or 214, 286 (4).

Students in the Geosciences program select one of the following options:

**Environmental Geology Option.** Emphasizes the study of geology as it pertains to the environment, including hydrogeology (ground-water resources and water quality) and the recognition and reduction of effects of geologic hazards (coastal erosion, volcanic eruptions, earthquakes). Students must take two of the following: GEO 277 (3), 465 or 485 (3), 468 (4), 482 (4), 484 (4), 515 (3), 568 (3), 577 (3), or 583 (3).

**Sedimentary Option.** Emphasizes the study and interpretation of depositional environments, both in the present and in the geologic record, including the study of sedimentary processes, paleontology, the reconstruction of paleoenvironments, and stratigraphy. Students must take two of the following: GEO 277 (3), 250 (4), 465 (3), 468 (4), 515 (3), 550 (3), or 555 (3).

**Petrology/Tectonics Option.** Emphasizes the study of igneous and metamorphic processes through geochemistry, petrography, structural analysis, and geophysics, leading to interpretations of rock petrogenesis and earth history. Students must take two of the following: GEO 465 (3), 530 (4), 531 (3), 580 (3), 581 (3), or CHM 431.

GEO 480, 497 and 499 are **capstone** experiences available for this major.

A total of 126 credits is required for graduation.

## Landscape Architecture

Landscape architecture is a curriculum leading to the Bachelor of Landscape Architecture (B.L.A.) degree. Accredited by the American Society of Landscape Architects, the curriculum is designed to prepare undergraduates for professional careers in the public and private sectors of landscape architecture that involve the design, planning, preservation, and restoration of the landscape by applying both art and science to achieve the best use of our land resources.

Landscape architects design and plan parks, recreation areas, new communities and residential developments, urban spaces, pedestrian areas, commercial centers, resort developments, transportation facilities, corporate and institutional centers, industrial parks, and waterfront developments. Their professional skills may also be used to preserve natural, historic, and coastal landscape projects.

The requirements of this curriculum include preparation in the basic arts and sciences. The major includes 57 credits of program courses; 22–24 credits of supporting requirements; and 13–15 credits of approved supporting electives through which a student may obtain additional preparation in art, natural resources, or plant sciences. Students are required to own a laptop computer by the time they enter the program. Specifications are available from the Landscape Architecture Program Office or online at [uri.edu/cels/lar](http://uri.edu/cels/lar). Graduation requirements include a minimum of 130 credits maintaining a grade point average of at least 2.50 and no landscape architecture grades below a C.

URI's Landscape Architecture Program (LAR) is oversubscribed. Accreditation standards regarding staff and facilities limit the present student acceptance into the major to 20 per year and require a competitive admission policy. Students will be reviewed twice during the course of their studies: first for admission into the lower-division design sequence and again for acceptance into the upper-division B.L.A. major. A cumulative

grade point average requirement is determined each year for both of these reviews. Recently, the cutoff has ranged from 2.50 to above 3.00 for those accepted to the lower and upper divisions.

Admission into the lower-division design sequence courses (LAR 243 and 244) requires departmental approval. Approximately 50 percent of the openings are filled by students entering as incoming freshmen and/or transfer students through Undergraduate Admission (subject to maintaining a minimum 2.50 grade point average with no grades in LAR courses below a C). These students begin the design sequence in the fall semester of their second year at URI. The remaining openings are filled by matriculated students through an application accompanied by a transcript of grades. Applications and transcripts are evaluated in February each year for acceptance into the lower-division courses in the coming fall. In order to encourage minority applicants, one available space is set aside each year for a minority applicant who meets the minimal program qualifications.

Acceptance into the upper-division (junior-senior) landscape architecture major is based on submission and review of a portfolio of lower-division work, academic transcript, and a written essay. A maximum of 20 students per year are accepted into the upper-division B.L.A. curriculum. Eligible applicants for the upper division are students enrolled in LAR 244, repeat applicants, and students wishing to transfer directly into the upper division from other landscape architecture programs. Only students who have completed comparable lower-division courses in programs that have been accredited by the American Society of Landscape Architects will be allowed to compete for these upper-division positions. Such transfer applicants must first be accepted into the University by the Office of Undergraduate Admission and have their portfolio, transcripts, and essays submitted to the director of the landscape architecture program before February 20 preceding the fall semester in which they wish to enroll.

Students will be notified of their acceptance into the upper-division program before preregistration for fall classes.

Interested students should discuss entrance probabilities with the program advisor.

## Marine Affairs

URI's Department of Marine Affairs offers the following degrees: B.A., B.S., M.A., M.M.A. (Master of Marine Affairs), and Ph.D.

The B.A. and B.S. in marine affairs focus on coastal and ocean areas and examine environments, resources, and uses from a variety of perspectives. Topics include coastal and fisheries management, ports and maritime transportation, ocean policy and ocean law.

A marine affairs major establishes a background for careers in the public or private sectors in a wide variety of marine-related fields. Typical areas of employment include positions in government concerned with coastal zone, environmental, or fishery management, and marine transportation. In the private sectors, students have secured positions in environmental consulting firms, marine insurance, public interest nongovernmental organizations, marinas, ports, and companies involved in shipping. The major serves well as an educational background for continued study in law, especially environmental, fishery, coastal zone, admiralty, and ocean law. Students have also entered graduate and professional programs in environmental management, public administration, community planning, marine affairs, and related fields.

Students in the Department of Marine Affairs who participate in the New England Regional Student Program must maintain a 2.8 G.P.A. and take at least one MAF course per year to retain their New England regional tuition status. Failure to meet these objectives will result in suspension of the reduced tuition privilege. Reinstatement may occur if the student meets these requirements for one year after the time of the suspension.

### Bachelor of Arts in Marine Affairs.

Students who obtain the B.A. in marine affairs must fulfill the Basic Liberal Studies requirements of the College of Arts and Sciences (page 50).

Students selecting this field are required to complete at least 30 credits (maximum 45) in marine affairs as follows.

All of the following courses (12 credits): MAF 100, 120, 220, and 410 **[capstone]**. Five of the following courses (15 credits): MAF 312, 415, 320, 330, 413, 434, 461, 465, 471, 472, 475, 484, and 499. One additional MAF course (three credits) must be taken to complete the required 30 credits in the degree.

In addition, students must also take STA 308 and OCG 123 or 401 (if OCG 123 is taken, it may also be used toward fulfilling the Basic Liberal Studies Natural Sciences requirement).

A total of 120 credits is required for graduation. At least 42 of these credits must be in courses numbered 300 or above.

### Bachelor of Science in Marine Affairs.

Students selecting this field must complete at least 30 hours in marine affairs with the following required MAF courses: MAF 100, 120, 220, 410 **[capstone]**, 482; and five of the following courses: MAF 312, 320, 330, 413, 415, 434, 461, 465, 471, 472, 475, 484, and 499.

In addition to the above requirements, students must take BIO 101; OCG 123 or 401; MTH 111 or 131; and WRT 333 (3).

Students must also select a total of 18 credits from the following, of which nine must be at the 300 level or above: AFS 102, 201, 210, 211, 321/322, 332, 362, 432, 483; BIO 141, 252, 345, 355, 360, 418, 455/457; CHM 103, 112, 124/126; EEC 105, 110, 205, 310, 345, 356, 410, 432, 435, 440, 441, 456, 460; GEO 100, 103, 210, 240, 277, 370, 450, 483; NRS 223, 361, 406, 410, 423, 424, 440, 461; NRS/GEO 482; OCE 101, 215, 307, 310, 311; PHY 109/110, 111/185, 112/186, 130, 213/285, 214/286, 306; STA 308, 409, 412, 413.

A total of 126 credits is required for graduation.

## Marine Biology

See page 94.

### Microbiology

This major, offered by the Department of Cell and Molecular Biology, meets the guidelines of the American Society for Microbiology. It will prepare students for work in a wide variety of scientific areas including molecular genetics, biotechnology, and the pharmaceutical industry, as well as many other areas of biological sciences. A strong background in chemistry is emphasized, providing excellent preparation for graduate or professional school. An option in biotechnology is also available.

Students who develop a strong interest in the clinical aspect of microbiology can easily move to URI's Clinical Laboratory Sciences program. This department also offers a Master of Science degree in cell and molecular biology, and a Ph.D. in biological sciences.

A minimum of 30 credits in microbiology is required, including MIC 333; the **capstone** experiences 413, 414, 415, 416, and 495; and one course selected from MIC 412, 422, 432, or 576. Students majoring in microbiology may include any course in microbiology; BIO 327, 331, 341, 432, 437, 465, and 534. Students planning to attend graduate school are advised to take MTH 131 and 132, or 141 and 142. In addition, they must take BIO 101, 102, and 352; CHM 101, 102, 112, 114, 212, 226, 227, and 228; BCH 311; PHY 213, 214, 285, and 286 or 111, 112, 185, and 186; and MTH 131 or 141 and one of the following: MTH 111, 132, 142; CSC 201; or STA 308.

*Note:* CHM 229 and 230, which are offered in summer only, may be substituted for CHM 226.

A total of 130 credits is required for graduation.

**Biotechnology Option.** Students in the microbiology major may elect the biotechnology option, which offers preparation for further work in research and development, biotechnology operations, quality assur-

ance, and regulatory affairs. This option emphasizes a broad and interdisciplinary overview of the biotechnology industry, and provides students with an academic background in microbiology, biochemistry, cell biology, molecular biology, and molecular genetics to prepare them for careers at several levels of industry.

In addition to the courses specified for the major, the following biochemistry and microbiology courses are required: BIO 341, 437; MIC 190, 211, 333, 413, 415, 499 and six additional credits of MIC or BCH course work. MIC 414, 416, and 495 are not required for students pursuing this option.

The required internship for this option (MIC 499) is conducted with the cooperation of local members of the biotechnology industry and may be pursued on a full- or part-time basis. Students should be aware that internships may be limited in number and are awarded on a competitive basis; therefore those interested in the biotechnology option should consult with their advisors early in their college career.

## Nutrition and Dietetics

This major prepares undergraduates for careers in nutrition-related fields. Two options, dietetics and nutrition, are available.

The major requires 11 credits in introductory professional courses including NFS 110, 207, 227, 236, and 276; 21–22 credits in sciences (four in general chemistry, four in organic chemistry, seven–eight in biology, four in microbiology, and three in biochemistry), three credits in statistics, and 25–29 credits in the concentration including the following courses: NFS 394, 395, 410, 441, 443, and 458 **[capstone]**. WRT 104 or 105, or 106, and COM 101 are required and may be used to fulfill general education requirements. There are 19–24 credits of supporting electives and 12 credits of free electives. A total of 123 credits is required for graduation.

Students will be admitted to the Nutrition and Dietetics major in the College of the Environment and Life Sciences after completing a minimum of 30 credits. Students must complete the following courses

prior to admission: 1) NFS 207, 2) either CHM 103/105 and CHM 124/126 or BIO 121 and BIO 242, and 3) either COM 100 or WRT 104/105. A minimum grade of C in NFS 207 and C- in the remaining courses is required for admission. In order to graduate, students will need to have earned a minimum of C in each of the required NFS courses and a minimum of C- in each of the required program courses. The required NFS courses for the Dietetics Option include: NFS 110, 207, 227, 236, 276, 337, 375, 376, 394, 395, 410, 441, 443, 444, and 458; and the required program courses include: CHM 103, 105, 124, and 126; BCH 311; BIO 121; BIO 242; MIC 201; WRT 104/105; COM 100; STA 220; SOC 100; and PSY 113. The required NFS courses for the Nutrition Option include: NFS 110, 207, 227, 236, 276, 394, 395, 410, 441, 443, 458, and two additional NFS concentration courses; the required program courses include: CHM 103, 105, 124, and 126; BCH 311; BIO 102 or 121; BIO 242; MIC 201; WRT 104/105; COM 100; and STA 220.

**Dietetics Option.** This option is required of all students planning to become registered dietitians. URI's dietetics program is accredited by the Commission on Accreditation for Dietetics Education of the American Dietetic Association (ADA), 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606, 312-899-0040, ext. 5400. This option provides students with the academic background in clinical, community, and administrative dietetics. In addition to the core courses specified for the major, the following courses are required: NFS 337, 375, 376, 444 and MGT 300. SOC 100 and PSY 113 are also required and may be used to fulfill general education requirements. Students are encouraged to use supporting elective and free elective courses to study disciplines related to the field.

After completing their B.S. requirements, students can qualify for the professional title of Registered Dietitian by completing supervised practice requirements and passing a national exam. The supervised practice requirement is met by completing an ADA-accredited dietetic internship program available to students on

a competitive basis nationwide. Internships may be combined with graduate programs in universities leading to an advanced degree. Students completing academic and supervised practice requirements become eligible to take the national registration examination.

**Nutrition Option.** This option is for students who want to study nutrition but do not plan to become registered dietitians. Using this option, students have the opportunity to design their own programs by combining training in nutrition with other areas that interest them. In addition to the courses specified for the major, students must complete a minimum of 3 credits in NFS 491/2 or NFS 451, and 9 credits selected from advanced-level NFS courses. Students must also select a "minor" field of study. To satisfy this requirement, students can complete any one of the University-approved minors, or complete 18 credits in a curriculum other than NFS. Examples of possible minors are health promotion, exercise science, psychology, international development, journalism, biology, and general business. Alternatively, with approval from the department, students may complete 18 credits related to their interests or career goals selected from several disciplines. Students may, for example, select courses to prepare for graduate school or meet basic admission requirements for medical school.

## Resource Economics and Commerce

This major, offered by the Department of Environmental and Natural Resource Economics (with courses listed under Resource Economics), provides students with a broad education focused on resource economics, economics, and natural resources sciences. In the private sector, careers can focus on the production, marketing, and distribution of natural resource commodities such as fisheries and agricultural products, timber, and petroleum, or on recreation and tourism. The major can also prepare the student for working with the conservation and management of natural resources at the

state and national levels, for advanced professional programs in community or urban planning or law, or for graduate study in resource and agricultural economics.

ECC 105 and NRS 100 are prerequisites for this major, which requires a total of 125 credits. Ten credits in basic sciences are required, including four in general chemistry and six in general biology. Fifteen credits are required in supporting sciences including three in computer science and six in mathematics, physics, genetics, plant physiology, population biology, introductory ecology, microbiology, general and organic chemistry, or physical geology. The remaining six credits in supporting sciences can be selected from courses in applied biology, oceanography, mathematics, chemistry, computer science, or statistics. Introductory calculus is strongly suggested. Twenty-four credits in concentration courses are required at the 300 level or above, including 15 credits in resource economics and three credits in microeconomic theory.

Thirty-one credits are required in supporting electives, which must include six credits in communication skills. The student normally selects six credits in communication in addition to the general education requirements. The remaining credits in concentration courses and supporting electives should be selected in consultation with a faculty advisor.

Students have considerable flexibility in choosing courses in the College of the Environment and Life Sciences and other colleges at the University. All students are required to take sufficient course work in the physical and biological sciences to gain familiarity with the resource area in which they are interested.

Students interested in water resources, for example, would select appropriate courses from natural resources science and chemistry. Students interested in fisheries marketing and trade should select course work in business, fisheries science and technology, and nutrition and food sciences. Students intending to pursue graduate studies in resource economics or economics should select course work in economic theory, mathematics, and statistics.

## Wildlife and Conservation Biology

The major in wildlife and conservation biology, offered through the Department of Natural Resources Science, prepares students for professional careers in the public and private sectors of wildlife biology. In addition, the major provides a solid background for graduate study. Wildlife biologists are professionals concerned with the scientific management of the earth's wildlife species and their habitats. They work in the areas of preservation, conservation, and management of wildlife species. Graduates can become Certified Wildlife Biologists (CWBs) who are recognized by the Wildlife Society, an international professional organization. In addition, wildlife majors meet the educational requirements for state and federal employment in the wildlife profession.

The major requires 13 credits of professional courses, which include natural resource conservation, seminar in natural resources, resource economics, introductory soil science, and conservation of populations and ecosystems. As part of the basic science requirements, wildlife majors must complete six to eight credits in introductory biological sciences; three credits in introductory ecology; four credits in introductory physics; four credits in physical geology; four credits in introductory chemistry; four credits in organic chemistry; three credits in introductory calculus; and three credits in introductory statistics. Required concentration courses (22–23 credits) include three credits in the principles of wildlife management; three credits in wildlife field techniques; four credits in field botany and taxonomy; three credits in wetland wildlife or nongame and endangered species management; and nine to ten credits from an approved list of concentration courses that may include, for example, field ornithology, biology of mammals, vertebrate biology, animal behavior, introduction to forest science, wetland wildlife management, wetland ecology, and wildlife biometrics. Supporting electives (31–34 credits) must

be selected from the approved list. We encourage students to complete course work so they can become certified wildlife biologists. The list includes the following upper-division course work: three credits in botany; six credits in zoology; six credits in resources policy or administration, environmental law, or land use planning; and six credits in communications. An additional 10–11 credits of supporting electives must be selected from concentration electives, or from other 300- or 400-level natural resources science courses. Up to 24 credits of experiential learning courses may be taken toward satisfying concentration (letter grade courses only) and supporting elective requirements.

NRS 402 and 403, or 423 and 425, or 522 and 524 are the **capstone** experiences in this major.

### MINORS IN NATURAL RESOURCES SCIENCE

The following minors are University-approved. Students may also design their own minors; see page 35.

**GIS and Remote Sensing.** This minor field of specialization provides students in-depth training in the use of GIS (geographic information system) and remote sensing technology and application of geospatial data processing methods to environmental problem solving. Students who declare a minor in GIS and remote sensing must complete 18 credit hours consisting of the following core courses: NRS 409, 410, 415, 516, and 522. The remaining credits may be taken from NRS 423, 524, 533, or CPL 511. Students minoring in GIS and remote sensing are encouraged to take a capstone course that allows them to apply their analytical skills in a real-world application.

**Soil Environmental Science.** This minor field of specialization provides students in-depth training in the application of soils information to solve environmental problems and issues. Students fulfilling the requirements of the soil environmental science minor meet the qualifications for basic

membership in the Society of Soil Scientists of Southern New England, are eligible for certification as soil scientists under the American Registry of Certified Professional Soil Scientists, and meet the requirements for federal job listings under soil scientists. Students who declare a minor in soil environmental science must complete 18 credits from the following courses: NRS 212, 312, 351, 361, 412, 426, 450, 452, 471, 510, 567, or GEO 515. Students minoring in soil environmental science are encouraged to take a capstone course that allows them to apply their analytical skills in a real-world application.

### Wildlife and Conservation Biology.

This minor field of specialization provides students in-depth training in the principles of managing wildlife populations and their habitats. Students who declare a minor in wildlife and conservation biology must complete at least 18 credits of NRS courses within the WCB major curriculum, at least 12 of these 18 credits must be at the 200 level or higher, and all courses in the minor must be taken for a letter grade. Students minoring in wildlife and conservation biology are encouraged to take a capstone course that allows them to apply their analytical skills in a real-world application.

A major in this program is also available. See above.

## COLLEGE OF HUMAN SCIENCE AND SERVICES

William Lynn McKinney, *Dean*  
Susan Roush, *Associate Dean*  
Nancy Kelley, *Assistant Dean*

The College of Human Science and Services is a people-oriented college designed to focus on the human and material resources needed to help individuals and groups solve human problems encountered in contemporary society. Our programs prepare students for a variety of professions in teacher education, health-related fields, and fields that have evolved from URI's historic land-grant mission in home economics. These programs include both formal and informal experiences with people in a wide variety of public service settings that enable students to develop the competencies needed in the field of human services. The teacher education programs offered through the college are outlined in the following departmental descriptions. For more information on teacher education programs, see page 41.

Degrees offered include a Bachelor of Science degree with majors in communicative disorders; human development and family studies; kinesiology; secondary education; textile marketing; and textiles, fashion merchandising, and design; and Bachelor of Arts degrees in elementary or secondary education.

The college sponsors a number of organizations and activities that provide special opportunities for students, including two child development centers, a family therapy clinic, historic textile and costume collection, computer laboratory, physical therapy clinic, and a speech and hearing clinic.

**Minors.** Students can declare a minor, which will appear on their transcripts as a category separate from their major. See page 35 for details.

The college participates in the following interdisciplinary minors: gerontology, hunger studies, leadership studies, and special populations (see pages 36–39). Details on minors offered within the college can be found later in this section.

## Faculty

**Communicative Disorders:** Professor J. Singer, *chairperson*. Associate Professors Kovarsky and Weiss; Assistant Professors M. Kim and Mahler; Clinical Assistant Professors Connors, Houle, and Theodore; Adjunct Assistant Professor R. Singer.

**School of Education:** Professor Byrd, *director*. Professors Boulmetis, Eichinger, Favazza, Heifetz, McKinney, Purnell, Trostle Brand, G. Willis, and Young; Associate Professors Adamy, Guglielmi, Hicks, Seitsinger, and Shim; Assistant Professors Deeney and Kern; Adjunct Assistant Professor Tierney; Research Associate Professor Brand.

**Human Development and Family Studies:** Professor B. Newman, *chairperson*. Professors Adams, Gray Anderson, Clark, Cohen, Knott, Schaffran, and Xiao; Associate Professors Branch, Kalymun, McCurdy, Richmond, and Saunders; Assistant Professors Kisler, Sparks, and Spears; Adjunct Professors P. Newman and Prochaska; Adjunct Instructors Blumen, Kerbel, and Warford.

**Kinesiology:** Professor Riebe, *chairperson*. Professors Lamont and Manfredi; Associate Professor Blissmer; Assistant Professors Ciccomascolo, Delmonico, Ellis, Kusz, and Xu; Lecturers Doll, Monahan, and Steen.

**Textiles, Fashion Merchandising, and Design:** Professor Welters, *chairperson*. Professors Bide and Ordonez; Associate Professor Harps-Logan; Assistant Professors Hannel, Kapstein, Kim, and Lillethun; Adjunct Professor Emery.

**Interdisciplinary Programs:** Gerontology—Professor Clark, *director*; Human Science and Services—Dean McKinney, *program head*; Leadership Studies—Associate Professor Richmond, *acting program head*; Special Populations—Associate Professor Roush, *acting program head*.

## Curriculum Requirements

**General Education Requirements.** All students pursuing a bachelor's degree in the college are required to develop a 39-credit program in general education within the framework listed on pages 33–35.

Students within the college must take, as part of their *English communication* requirement, a minimum of three credits from WRT 104, 105, or 106 and a minimum of three credits from COM 100; and as part of their *social sciences* requirement, a minimum of three credits from APG, PSY, and SOC courses approved for general education. Individual programs within the college may require specific courses.

Students in the elementary and secondary education program must follow the basic liberal studies requirements of the College of Arts and Sciences.

**Field Work.** Many of the college's academic programs require a supervised field work experience as part of the degree requirements. This experience is designed to provide students with the opportunity to apply classroom knowledge in a career-related setting. Placements are made in a wide variety of agencies such as public schools, health care facilities, child care centers, and other human service settings. Satisfactory completion of a required field experience depends on achievement of basic competencies established by the academic department in cooperation with the agency. The University supervisor is responsible for determining whether or not the student has attained the required competencies and, in some cases, may extend the time required for the experience until the student's performance is satisfactory. If in the opinion of the University supervisor the performance of the student is unsatisfactory, and particularly if client/patient safety is at risk, the student may be removed from the field experience prior to the end of the semester or term.

**Course Load.** Approval of the advisor and the dean is needed for a schedule of more than 19 credits per semester.

**Repeating Courses for Credit.** Unless otherwise stated in the course description, a course cannot be repeated for credit. Credit can be counted only once toward the total credits required for graduation. Repeating courses in which a grade of C or better was earned requires approval of the student's academic dean; students may need to take such courses on a pass-fail basis.

**Curricular Modifications.** In consultation with the advisor, and with the approval of the department chairperson, a student will be permitted to modify the normal requirements of the department in which the student is majoring. The decision of the department chair is final. Requirements outside the major may be modified only with the approval of the Scholastic Standing Committee of the College of Human Science and Services. Petition forms are available in the Office of the Dean. Minimum grade point average and total credit requirements are not petitionable.

**Transfer Students.** Transfer students should be advised that admission to some programs in the college requires meeting certain prerequisites or separate admission criteria. Teacher education programs in the School of Education, Department of Human Development and Family Studies, and the Department of Kinesiology have specific admission criteria and generally require that a matriculated student complete at least one semester of work at URI before applying for admission. Transfer students may be admitted to the University, but are not admitted directly into these programs.

The Plan for Early Contingent Admission to the D.P.T. Program in Physical Therapy requires careful and timely course planning typically beginning with the freshman year at URI. It is unlikely that transfer students would have the appropriate sequence of courses, including the prerequisites, that would allow them to take advantage of this option.

Students interested in any of the above programs should refer to the specific program descriptions on the following pages and consult the department for additional information.

**Graduation.** It is the responsibility of each student to file an Intent to Graduate form and curriculum work sheet approved by his or her advisor in the Dean's Office. The deadline is September 15 for May graduation, April 5 for August graduation, and May 5 for December graduation.

## Communicative Disorders

This curriculum leads to a Bachelor of Science (B.S.) degree. In addition to general education requirements and appropriate free electives, a major of 43 credits in communicative disorders includes 34 credits of required courses and nine credits of professional electives.

The required courses are CMD 260, 261, 372, 373, 374, 375, 376, 377, 454, 465, and 493. The remaining nine credits (three courses) must be selected from the following courses: BMS 312; COM 221, 251; CMD 440, 475, 491, 492; EDC 312; HDF 200, 201, 203, 312, 314, 400; HIS 117; HSS 120; LIB 120; LIN 200, 220; PSY 232, 254, 300, 388, 442; SOC 224; STA 220, 308.

With careful early planning, students can use free electives to achieve a double major or explore special-interest areas in depth. Students should anticipate the necessity for graduate study in speech-language pathology. The typical minimum entry requirement for graduate study is a grade point average of 3.00.

A total of 120 credits is required for graduation.

**Accelerated Bachelor's-Master's Degree Program in Speech-Language Pathology.** URI sixth-semester students pursuing a B.S. degree in communicative disorders with 25 credits of electives remaining may apply for acceptance into an accelerated master's degree program in speech-language pathology. This accelerated program is not available to non-URI undergraduates or part-time graduate students. Students accepted to these programs follow a specified sequence of graduate-level course work and clinical practicum during their senior year, and complete the master's degree with an additional one year and one summer of full-time study in speech-language pathology. A cumulative grade point average of 3.00 overall and 3.20 in the major is required, with satisfactory MAT or GRE scores. Three letters of recommendation (two from URI communicative disorders faculty) are also needed. Students should indicate their intent to apply to the accelerated program in the graduate application materials.

Students in the speech-language pathology program are required to take a minimum of 24 credits in specified course work and practicum at the 400–500 level in the fifth year. Requirements for the M.S. in speech-language pathology are outlined in "Graduate Programs" (see pages 156–157 for more information).

## Dental Hygiene

As of fall 2002, admission to the URI dental hygiene programs has been suspended.

## Education

Curriculums in secondary education lead to the Bachelor of Science or Bachelor of Arts degrees, the curriculum in elementary education to the Bachelor of Arts (B.A.) degree. Students wishing to enroll in the early childhood education program must major in human development and family studies and seek admission to the teacher education component of this program, as outlined below. The Master of Arts (M.A.) degree programs in education are described in "Graduate Programs."

The curriculums offer a balanced program of academic preparation and professional training. The required professional courses contribute directly to the student's understanding the teacher's role in society and developing teaching skills.

Successful completion of the early childhood education program leads to an initial teaching certificate for the pre-school and primary grades (PK–2), while completion of the elementary education program leads to an initial teaching certificate for grades 1–6. The secondary education program leads to an initial teaching certificate for a specific subject area in grades 7–12.

If you are a transfer student, see earlier on this page for information on transferring into these programs.

**Admission Requirements.** Students interested in undergraduate teacher education programs must apply for admission to the Office of Teacher Education. Students interested in URI's early childhood, elementary, and secondary education programs must

submit a portfolio and sit for an interview as part of the admission process. Please visit [uri.edu/hss/education/default](http://uri.edu/hss/education/default) for additional information.

Applications for admission to teacher education programs are normally submitted during the sophomore year. Applications will be reviewed by a departmental screening committee based on the following criteria: 1) recommendations from faculty and others who have knowledge of the candidate's experience or interest in working in education; 2) a writing sample expressing career goals, experience in working with children, and expectations as a teacher; 3) passing scores on the PPST: Reading 172, Writing 171, Math 171 or a score of 1100 on the SAT; 4) the student's academic record, including a cumulative grade point average of 2.50 or better and grades in the academic major or specialization averaging 2.50 or better. Students applying to the early childhood education program must attain a C or better in HDF 203 or equivalent for acceptance into the program.

Students should consult with the elementary or HDF advisor at University College, the Office of Teacher Education, or the HSS advisor at the Providence Campus.

Due to limited staff and facilities, admission to the programs in early childhood and elementary education is limited. Some applicants meeting the minimum requirements may not be admitted due to limited space. Students should check with the School of Education, the Department of Human Development and Family Studies, or their University College advisor as early as possible for additional information.

Students denied admission can petition the department for a review of the decision. In such cases, the school's screening committee meets to consider the appeal.

Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students can reapply for admission but should understand that this may delay their anticipated graduation date.

**Program Requirements.** For courses required for early childhood education, see "Human Development and Family Studies" on the next page. For more information on

teacher education programs, see page 41. For graduate teacher education programs, see the "Graduate Programs" section.

Students who are admitted to the elementary education program are required to complete a B.A. degree. Students must select a major in the College of Arts and Sciences, or biology in the College of the Environment and Life Sciences, in addition to the major in elementary education. Students must also fulfill the basic liberal studies requirements of the College of Arts and Sciences as they relate to double majors. See program requirements in the College of Arts and Sciences section.

The professional sequence courses required for elementary education are EDC 250, 312, 102 or 360, 402, 424, 425 or HDF 302, 452, 453, 454, 455, 456, 457, 458, 459 and EDC 460. These courses are taken prior to student teaching. EDC 484 and 485 make up the student teaching experience. The following are also required and can be taken as part of the basic liberal studies requirements: COM 101; HIS 142; PSY 113, 232; WRT 104, 105, or 106; and a one-credit health education course or equivalent. Students should contact the School of Education for more details.

Students seeking to teach in a middle school must obtain a middle level endorsement and be eligible for elementary or secondary certification. The professional sequence of courses required for middle level endorsement is EDC 400, EDC 415 or an approved adolescent development course, and a practicum. These courses should be taken prior to student teaching. EDC 484 and 485 make up the student teaching semester. Teacher candidates seeking a middle level endorsement are required to teach in a middle school in addition to their elementary or secondary experience. In addition, 21–30 credits in one of the following content areas is required: English/language arts, mathematics, science, social studies, or foreign language. Final projects for each course must be uploaded into the electronic portfolio along with a self-reflection prior to the end of each course. Admission to the middle level endorsement program is contingent upon acceptance to the el-

ementary or secondary education program. Prior to student teaching, candidates must successfully meet the standards for EDC 400 and the pre-student-teaching review, which includes review of all required courses and e-folio tasks by the secondary and elementary teams in conjunction with the middle level team and the Office of Teacher Education. Elementary education students should see a middle level advisor for specific course requirements.

The professional sequence courses required for secondary education are EDC 250, 312, 102 or 360, 371, 402, 430, 431, and 448. These courses are taken prior to student teaching. EDC 484 and 485 make up the student teaching semester. PSY 113 and HDF 310 or EDC 415 are also required. Students in secondary education are required to take a content area exam in their area of certification.

Students pursuing a program in secondary education normally obtain a B.A. degree, double majoring in education and their subject matter specialization, although a B.S. degree in secondary education is available in some specialization areas. Secondary education programs are offered in biology, chemistry, English, general science, history, mathematics, modern language, physics, and social studies.

Students in all programs must maintain minimum grade point averages of 2.50 overall, 2.50 in their education major, and 2.50 in their academic major area. To be eligible for student teaching, students must earn a grade of at least a C in EDC 430 and 448 (secondary); EDC 424, 425, 452, 453, 455, 456, 457, and 458 (elementary); HDF 203, 301, 303, EDC 424, 426, and 429 (early childhood). Failure to maintain these grades and/or averages will result in "program probation," a one-semester period during which students have the opportunity to earn acceptable grades but may not student teach. Failure to return grade averages to acceptable standing after one semester leads to dismissal from the program.

Students in the School of Education, graduate and undergraduate certification and licensure programs will be required to take and pass a content area exam(s)

in their area of certification and any other exam required for state licensure prior to student teaching or final internship. Contact the Office of Teacher Education for the "passing" scores required for each discipline.

The major in elementary education requires 128 credits; secondary education requires 120 credits.

The School of Education has designated EDC 485 as its **capstone** course.

## Human Development and Family Studies

The curriculum in human development and family studies leads to a Bachelor of Science degree. The department also offers a certification program in family financial counseling and planning, as well as the Master of Science degree (see "Graduate Programs").

The undergraduate B.S. curriculum provides a general background for work with children, families, and adults. Most professions in human development and family studies require academic work beyond the bachelor's degree for continuing professional work and advancement. Individuals with a baccalaureate degree are employed, however, as professionals in nursery schools, child care centers, institutions and hospitals, and in recreational, child guidance, casework, and other community agencies. Students completing the program in family financial counseling and planning are employed in agencies providing family financial and credit counseling services.

### Program student learning objectives:

Graduates of the program in human development and family studies will acquire and utilize knowledge and skills necessary for a professional position or graduate/professional training in the human development and family studies field; understand and use methods of inquiry appropriate to this field, including relevant quantitative or qualitative analytic tools; use acquired knowledge, skills, and creativity to identify and solve complex human science problems; communicate clearly and effectively using a variety of methods; demonstrate a sense of respon-

sibility to self, community, and society; and acquire knowledge and practice regarding the ethical principles and best practices in human development and family studies discipline. A more detailed description of the student learning objectives can be found at the HDF program Web site: [uri.edu/hss/hdf](http://uri.edu/hss/hdf).

**Admission Requirements.** Students seeking admission to this bachelor's degree program must complete the following courses with an overall grade point average of 2.00 or better prior to acceptance for admission: HDF 200 or 201, PSY 113, any 100- or 200-level sociology course, and three general education credits in mathematics.

**Program Requirements.** Students are required to complete the following core curriculum:

- 1) a one-credit personal and career development course, HDF 180;
- 2) 15 credits of core courses including HDF 200, 201, 202, 205, and 230;
- 3) any two development courses—courses include HDF 203, 306, 310 and 311, 312, 314;
- 4) six to 12 credits of senior-level field experience chosen from the following options—HDF 480/481; HDF 477/478; EDC 484/485 (early childhood education students only); HDF 497; or the OIEE Internship Program (see page 43).

Additionally, students are required to complete a 12-credit concentration in one of the following two areas:

*Professional Content for Child Settings:* any 12 credits—HDF 357, 400, 430, 432, 434, 455 and 456, HDF 302 or EDC 425.

*Professional Content for Adolescent, Adult, Aging and Family Settings:* any 12 credits—HDF 357, 418, 421, 428, 430, 431, 432, 433, 434, 437, 440.

To enhance their concentrations, students must also complete 12 credits of professional electives including HDF 450. Professional electives must be approved in consultation with an advisor, and nine of the 12 credits must be at the 300 level or above. Field experience does not meet this requirement.

Students must have from 21 to 30 credits of free electives to reach the 120-credit B.S. degree requirements.

For information on transferring into this program, see page 104.

**Minor in Family Financial Counseling and Planning.** Students outside the Department of Human Development and Family Studies may declare a minor in family financial counseling and planning by completing 18 credits as follows: HDF 418, 424, 426, 450, 451, and one of the following courses: HDF 205, 210, 225, or 428.

**Certification Program in Family Financial Counseling and Planning.** HDF 200, 201, and 205 must be completed prior to admission into this program. Students will then select two courses from HDF 210, 225, and 428; take HDF 418, 424, 426, 450, and 451; and HDF 477, 478 for their senior fieldwork experience.

**Early Childhood Education.** A portion of the courses in the HDF curriculum, plus certain others in education, meet the requirements for the initial Early Childhood Education Certificate (nursery through grade 2) in Rhode Island. Students who wish to meet the requirements for this certificate in Rhode Island must apply to Early Childhood Education through the Office of Teacher Education. See page 41 for admission requirements, certification in other states, and other information regarding teacher education.

Students complete an application and develop an admission portfolio during the sophomore year. The portfolio includes materials in the following areas: interpersonal and communication skills, academics, experience with children in community settings, and diversity experiences. Students must sit for an interview and take several examinations. Because there are only nine credits of free electives in the program, early consultation with an HDF advisor is important if students are to finish their degree in a timely manner.

URI's curriculum, shown below, meets the mandates for beginning teachers set

by Rhode Island's Department of Education. Curriculum requirements for the Early Childhood Education (ECE) Certificate are as follows (in this order):

Prior to acceptance into early childhood education: 1) 39 credits of general education courses (to be taken prior to formal application, including EDC 102, 250, and 312, and NFS 207); after acceptance into ECE program: 2) 16 credits of core courses including HDF 180, 200, 201, 202, 205, and 230; 3) professional content courses totaling 13 credits; these are specific courses that are already required plus one 400-level course (HDF 203, HDF 302 or EDC 425, HDF 357, HDF 400 or 432); 4) certificate program (total 27 credits)—EDC 102, 250, 312, 402, 426 and 350, 429, 424; HDF 301, 303; and 5) final 15-credit senior-level field experience, EDC 484/485 Student Teaching and Seminar.

To be eligible for student teaching, students must maintain a grade point average of 2.50 overall and 2.50 in the major, and attain a grade of at least C in HDF 203, 301, 303, EDC 402, 424, 426, and 429. Failure to maintain these averages will result in "program probation," a one-semester period during which students have the opportunity to earn acceptable grades but may not continue on the early childhood course sequence or student teach. Failure to return grade averages to acceptable standing after one semester will lead to dismissal from the program.

URI's early childhood education program totals 111 credits plus nine credits of free electives; 120 credits are required for graduation.

## Human Science and Services

As of fall 2002, admission to the URI human science and services degree program has been suspended.

## Kinesiology

This curriculum in kinesiology leads to a Bachelor of Science degree. The major is designed for students who plan to pursue careers in the broad fields of exercise science, health fitness, and physical

education teacher education. Students can prepare for certification as a public school teacher (physical education K-12) with additional study opportunities including endorsement in adapted physical education and certification in health education. For those interested in alternative careers in kinesiology, options are offered in exercise science, health fitness, and general studies in kinesiology. The department also offers a Master of Science degree and a teacher certification preparation program (see "Graduate Programs").

The Department of Kinesiology offers up-to-date research and teaching facilities, including a biochemistry laboratory, electron microscopy laboratory, health fitness assessment laboratory, muscle fitness laboratory, and a human performance laboratory with treadmill, ECG monitoring, metabolic cart, and body composition testing equipment.

Students seeking admission to this program must have completed 24 credits including BIO 101 and BIO 121. In addition, students entering the program must have a minimum GPA of 2.00 and must have received a grade of C (2.00) or better in BIO 121.

**Kinesiology Options.** Students are strongly advised to seek guidance from their advisor in planning their course of study and choosing a focus area.

*Exercise Science Option.* The exercise science option prepares students to analyze physical activity, exercise, and sport in a physiological context, with an emphasis on basic science courses. This option is for students considering careers or graduate degrees in health care professions: exercise physiology, cardiac rehabilitation, physical therapy, physician's assistant, and occupational therapy. Students in this option are required to have a cumulative grade point average from KIN core and specialization requirements of 2.50 or higher before completing supervised field work.

*Health Fitness Option.* This option promotes the understanding of the benefits of physical activity and is designed for students interested in becoming health

fitness practitioners. Career opportunities exist in corporate, community, commercial, and hospital-based fitness and wellness centers. Students will be prepared to become certified health/fitness instructors, strength and conditioning specialists, or personal trainers. This option also prepares students for continuing study in exercise science, fitness management, health promotion, preventive medicine, and related fields. Students in this option are required to have a cumulative grade point average from KIN core and specialization requirements of 2.50 or higher before completing supervised field work.

*Physical Education Teacher Education Option.* This option is designed for students seeking teacher certification in physical education at the elementary and secondary levels. Completion of the NCATE approved certification program fulfills the requirement for teacher certification in Rhode Island and the majority of other states. Students interested in undergraduate teacher education programs must apply for admission to URI's Office of Teacher Education. Applications for admission to teacher education programs are normally submitted during the sophomore year. A departmental screening committee reviews the applications. The committee's decision is based on the following criteria: 1) recommendations from faculty and others who have knowledge of the candidate's experience or interest in working in education; 2) a writing sample expressing career goals, experience working with children, and expectations as a teacher; 3) passing scores on the PPST (Reading 172, Writing 171, Math 171) or a score of 1100 on the SAT; 4) interview with presentation of admission portfolio; 5) completion of at least 30 credits of coursework including KIN 270; and 6) an overall GPA of 2.50 or better and grades of C or better in KIN 270, COM 100, and WRT 104, 105, or 106. If denied admission, students can petition the department for a decision review. Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students may reapply for admission to the teacher education program but

should understand that this may delay their anticipated graduation date. Students in the physical education teacher education program are required to have a cumulative grade point average of 2.70 or higher in KIN courses before student teaching (EDC 486/7). Students in the physical education teacher education certification and licensure program are required to take and pass the Praxis II: Principles of Learning and Teaching (PLT) Test and the Physical Education Content Knowledge Test prior to student teaching. Contact the Office of Teacher Education for the "passing" scores required for each test.

*Early Contingent Admission to URI Physical Therapy Program Option.* This advanced specialization is designed for highly qualified students who have decided on a career in physical therapy and wish to attend the URI D.P.T. program. Students successfully following this track will be allowed to apply for the URI D.P.T. program during their junior year. Following acceptance, credits earned the first year in the physical therapy program will be used to complete the B.S. degree in kinesiology. Students in this track must complete the following requirements to stay in this accelerated program: 1) complete the required course sequence and have a 3.20 or higher GPA at the completion of freshman year; 2) receive a minimum grade of 3.00 in BIO 121; 3) complete the required course sequence and have a 3.30 or higher GPA at the completion of sophomore year; and 4) complete the required course sequence and have a GPA of 3.40 or higher following the first semester of the junior year. Students applying for early contingent admission must also complete all admission requirements set by the D.P.T. program (see "Physical Therapy" in the "Graduate Programs" section of this catalog). Completion of this specialization does not guarantee admission into URI's D.P.T. program.

*General.* This option is designed for the student who desires a broad experience in kinesiology. It may also be used for students transferring into the department.

**Degree Requirements.** The following courses are required of all students in kinesiology: URI 101 (1 credit), 39 credits of general education including WRT 104, 105, or 106; COM 100; BIO 101; CHM 103; and PSY 113. Core curriculum requirements (22 credits) include BIO 121, 242; KIN 334, 335, 123, 272, 278, 369, and 370. A total of 128 credits are required for graduation. Specific requirements for the different degree options are listed below.

*Teacher certification* requirements include: KIN 270, 304, 305, 310, 314, 315, 324, 380, 382, 410, 415; PSY 232; EDC 312, 485, 486/487, 7 credits of practicum activity including KIN 120, 222, 322, swimming, 1-1/2 credits of KIN 115, and 1-1/2 credits of KIN 215. Students in this option have ten credits of professional electives and three credits of free electives. They are encouraged to use these credits toward health certification and the endorsement in adapted physical education (see advising sheets).

Requirements in the *health fitness* option include KIN 105L, 120, 243, 275, 325, 382, 420, 425, 484, 486; NFS 207, plus 3 credits of an approved 400-level course in health promotion. Additionally, to reach the required 128 credits, students take eight credits of free electives and select 18 credits from the following specialized electives: BCH 311; BUS 140, 201, 202, 315; CHM 124; COM 202, 221, 324, 351; HDF 201, 300, 301, 314, 357, 402, 450; NFS 360, 441, 444; KIN 391; PHY 111, 112, 185, 186; PSY 103; SOC 224; WRT 227, 235.

The *exercise science* option requires CHM 105, 124, 126; BIO 244; BCM 311 and 312; NFS 207; KIN 243, 275, 325, 420, 484, and 486. Additionally there are 15 credits selected from specialized electives and eight credits of free electives. Students may need to use free electives to complete requirements for many graduate programs. Specialization electives that students may choose from are BIO 445, 451, 453; BCH 464; NFS 360, 441, 444; MIC 211; KIN 120, 391; PHY 111, 112, 185, 186; PSY 300; SOC 100, 224; STA 307, 308, 409, 412. In addition, students applying for URI's physical therapy program must take the follow-

ing classes as specialization or free electives: PHY 111, 185, 112, 186; MTH 111; a basic statistics course (through ANOVA) and a second level psychology course (developmental or abnormal psychology preferred).

Requirements specific to the general option include KIN 120, 130, 243, 270, 275, 322, 375; NFS 207; CSC 101; and HDF 357. Additionally, students must complete 18-21 credits in a department-approved focus area, or complete a University-approved minor. Students also complete courses to fulfill the general education requirements, and the kinesiology core courses that are common to all options in the department.

## Textile Marketing

This interdepartmental curriculum leads to a Bachelor of Science degree. It combines the professional requirements of a major in textiles with the requirements of the College of Business Administration and is designed to prepare students for wholesale and retail marketing positions in the textile industry.

Textile marketing managers are responsible for planning and directing the flow of textile products from manufacturers to consumers. The major, which provides a strong background in both textiles and marketing, is designed to give students the opportunity to explore the areas of manufacturing, market research, consumer behavior, advertising, promotion, fashion, and sales.

Freshmen who complete a minimum of 27 credits with an overall grade point average of 3.00 or higher and who complete CSC 101 and MTH 131 (or their equivalents BUS 110 and 111) with a B or higher will be admitted to the College of Human Science and Services at the end of the freshman year. Students who have a minimum of 42 credits, a grade point average of 2.40 or higher, and who have successfully (with an average of 2.40 or higher) completed CSC 101, MTH 131, STA 308 (or their equivalents BUS 110, 111, 210), BUS 201, and ECN 201 after the first semester of the sophomore year will be admitted to the College of Human Science and Services. Students not meeting these requirements may be eligible to transfer

to the textiles, fashion merchandising, and design program.

Students in this curriculum must take the following courses: TMD 103, 224, 303<sup>1</sup>, 313, 402, 403, 433<sup>2</sup>; one of the following: TMD 240, 440, or 441; three credits of a TMD elective; BUS 201, 202, 315, 341, 365, 366, 367; CSC 101; or nine credits from BUS 465, 466, 467, 468, or 469; MTH 131; and STA 308, 412. Students must also take the following courses to complete general education requirements: CHM 101/102 or 103/105; one of the following: BIO 105, MIC 190, NFS 207, PHY 109/110, PHY 111/185, or PHY 112/186; and ECN 201, 202.

A total of 120 credits is required for graduation.

## Textiles, Fashion Merchandising, and Design

This curriculum leads to a Bachelor of Science degree. The Master of Science (M.S.) program is described in the "Graduate Programs" section.

The major is open to men and women with ability and professional interest in the artistic and technical aspects of the subject. Specialized programs of study prepare students for careers in the design, development, manufacture, and merchandising of textiles, apparel, and interior furnishings. Qualified students can prepare for graduate studies.

The following core courses are required: TMD 103, 224, 232, 303<sup>1</sup>, 313, 402, 433<sup>2</sup>; one of the following: TMD 240, 440, or 441; one of the following pairs: 1) TMD 226, and 326 or 426; 2) TMD 327, and 222 or 325; ART 101, 207; ARH 120, 251, or 252; CHM 101/102 or 103/105; ECN 201 and 202; HDF 225; one of the following: BIO 105, MIC 190, NFS 207, PHY 109/110, PHY 111/185, or PHY 112/186. Twelve credits of TMD electives (six credits must be upper-level courses and no more than three credits from TMD 361, 362, or 461, 462) and 18 credits of professional electives (nine credits from any one area) are required. Students should choose TMD electives and professional electives in consultation with an academic advisor. Students must com-

plete 24 credits with an overall 2.00 GPA and complete CHM 101 or 103, and TMD 103 and the general education mathematics requirement with a 2.00 average to transfer to the College of Human Science and Services. (The same requirements apply to students wishing to transfer into TMD from other majors.) TMD 402 is the **capstone** experience in this major. To complement classroom and laboratory/studio instruction, internships and study abroad are encouraged.

A total of 125 credits is required for graduation.

**Apparel Studies.** Students choosing this area of emphasis should select 12 credits of electives from TMD 222, 325, 327, 335, and an additional 18 credits of professional electives<sup>3</sup> from art, business, or theatre.

**Fashion Merchandising.** Students choosing this area of emphasis should select 12 credits of electives from TMD 222, 232, 332, 432, 442, 452, and an additional 18 credits of professional electives<sup>3</sup> from business and/or art.

**Interior Furnishings and Design.** Students choosing this area of emphasis should select 12 credits of electives from TMD 226, 326, 426, 440, and an additional 18 credits of professional electives<sup>3</sup> from art and/or business.

**Textile Science.** Students selecting this area of concentration should take TMD 403 and 413 as well as additional chemistry, chemical engineering, and/or statistics courses. An internship in textile manufacturing is recommended. The 18 credits of professional electives<sup>3</sup> should be selected from MTH 111, 131; PHY 111 and 112 or 213 and 214; STA 308 or 412 or CSC 201; CHM 112, 114, 212, 226, 227, or 228.

Students in this option are encouraged to broaden and deepen knowledge of textile science by enrolling for one or two semesters at another university through an exchange program. Through a special arrangement, URI students may study for a semester or year at the textile sciences department at the University of Massachusetts–Dartmouth, which has

extensive textile manufacturing equipment and analytical instrumentation. Possible course work includes fiber science, yarn spinning, warp and weft knitting, jacquard or dobby weaving, composites, nonwovens, and manufacturing facilities design.

**General TMD Program.** Students may structure their own programs by concentrating course work in areas such as consumer studies, journalism, or gerontology. Selection of the 12 required TMD elective credits and the 18 professional elective credits<sup>3</sup> should strengthen career goals and interests.

**Art Minor.** Students with an interest in apparel design or interior design should consider a minor in art. The requirements for this minor are determined by the Art Department and consist of 18 credits of any art or art history courses, 12 credits of which must be at the 200 level or above. The overall URI requirements for a minor apply (see page 35). Courses particularly appropriate to TMD can be determined by consultation with TMD and Art faculty.

**Double Major in a "Fashion" Language.** France and Italy lead the luxury fashion market. Students enrolled in the Bachelor of Science program in Textiles, Fashion Merchandising, and Design may earn a Bachelor of Arts in either French or Italian. Students must complete the requirements for both degrees. With careful planning, no extra semesters are required. TMD students who double major in a "fashion" language are strongly encouraged to participate in a study abroad experience and/or a professional internship in France or Italy. The Office of International Education and the respective departments help students arrange semester-long programs with affiliate universities. Students who graduate with majors in TMD and either French or Italian are well prepared to compete in the global fashion industry.

<sup>1</sup> Admission to the degree-granting college in the major is a prerequisite for TMD 303.

<sup>2</sup> Economics is a prerequisite for TMD 433 and HDF 225.

<sup>3</sup> Courses related to the student's career goals, subject to approval by an advisor.

## COLLEGE OF NURSING

Dayle H. Joseph, *Dean*  
Paula A. Viau, *Associate Dean*

The College of Nursing offers a curriculum leading to the Bachelor of Science (B.S.) degree. The college also offers the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees.

### Faculty

Professors Burbank, Dufault, Dunphy, Joseph, J. Miller, Padula, Schwartz-Barcott, M. Sullivan, and Yeaw; Associate Professors Brown, Coppa, Feather, G. Ferszt, Hames, and Viau; Assistant Professors Caines, Hecker, Lauzon-Clabo, Leveillee, Misto, and O'Brien; Clinical Professor Mercer; Associate Clinical Professor Palm; Clinical Assistant Professors Carley, Dassie, Doyle-Moss, Dugas, Evans, Gerzevitz, Lavin, Schwartz, and Stout.

URI's baccalaureate program is designed to prepare students with academic and personal potential to become professional nurses. It aims to develop mature, well-informed graduates who will meet the challenges of health care delivery and continued learning.

Nursing is a creative activity that provides human services for the promotion of health, prevention of illness, and care of the ill. It is interdependent with all other disciplines concerned with health. Nursing knowledge is viewed as a unique synthesis drawn from the humanities and the natural, biomedical, and social sciences. Students use a systems perspective as a conceptual base to nursing. This conceptual approach to nursing incorporates the whole person and his or her environment with the nursing process. Our nursing curriculum enhances students' ability to function professionally in community and home care settings with diverse populations.

Clinical practicums include experience in numerous community agencies, schools, nursing homes, ambulatory care facilities, and hospitals throughout Rhode Island.

There are three routes to admission to the college's baccalaureate program:

1) *Students with no previous college study* begin their preparation in University College with a major in nursing. After completion of 30–40 credits (which must include required foundation courses) with a minimum 2.80 overall grade point average and a 2.20 grade point average in the foundation courses, they may apply for transfer to the College of Nursing. This process is competitive; space is limited, and priority is given to students with strong academic records.

2) *Students with college study in another major or some nursing study in another baccalaureate program* and a minimum of 45 completed credits, if accepted by the University, may be admitted directly into the College of Nursing. To enroll in clinical nursing courses, transfer students must acquire a URI-based grade point average of 2.80 or higher and 2.20 in the foundation courses. Grades from courses taken at the other institution are not included in the student's grade point average. Students who transfer from another college or university are admitted into clinical nursing courses on a space-available basis.

Because the number of students accepted into clinical courses is limited, transfer students are advised to contact the associate dean before applying for admission to be sure of placement in a specific course.

3) *Registered nurse students* who have completed diploma or associate degree programs are not required to submit scholastic aptitude scores when seeking admission. As adult students who have developed competence in basic subject areas, they may demonstrate their mastery by completing the College Level Examination Program (CLEP) sponsored by the College Entrance Examination Board. Advanced credit allowances are based on a review of the candidate's test scores and preparatory experience.

R.N. students are required to take 18 credits of nursing courses as follows: NUR 246, 253, 346, 443, 444, and 446 or 503.

They are also required to meet the remaining program specifications. R.N. students must have an active Rhode Island nursing license and malpractice insurance.

A total of 120 credits is required for R.N.s to earn the B.S. degree.

The usual time for completion of all requirements for students with no previous college or nursing study is eight semesters. All students in the College of Nursing meet all the general education requirements of the University, as listed in "Undergraduate Program Requirements," pages 33–35. Entry into clinical courses is competitive, space is limited, and entry is based on grade point average and the number of semesters students have been enrolled in nursing. Because of space limitations, students may have to wait one or more semesters before being accepted into NUR 203.

A minimum grade of C (73) must be achieved in all required nursing courses and in each foundation course. Students will not be allowed to repeat a required nursing course more than once. The faculty reserves the right to require withdrawal from the college of a student who gives evidence academically and/or personally of inability to carry out professional responsibility in nursing. The student is limited to 18 credits per semester except by permission of the dean for special program adjustments or when participating in the Honors Program.

General expenses are approximately the same as for other University students. Special items include uniforms, nursing equipment, transportation, academic achievement testing, and lab fees for each clinical course. The use of an automobile or funds to meet public transportation costs is required for the clinical experiences. Students must maintain car insurance as required by state law.

The program is approved by the Commission on Collegiate Nursing Education and the Rhode Island Board of Nurse Registration and Nursing Education. The graduate is eligible for examination for professional licensure as a registered nurse (R.N.).

The law requires criminal background checks for persons providing care in community agencies. Updated health requirements and CPR certification are mandated throughout the clinical courses.

## Curriculum Requirements

**Foundation Courses.** The following are required before transfer from University College: CHM 103 (3), 124 (3); NUR 103 (3); PSY 113 (3); BIO 121 (4), 242 (3), 244 (1); MIC 201; one writing (Cw) course (3), URI 101 (1).

The following are prerequisites for some nursing courses, and therefore are recommended during the first three semesters: NFS 207 (3); MIC 201 (4); PSY 232 (3); SOC 100 (3); STA 220 (3) or PSY 300 (3).

An example of the curriculum plan follows. (Individual programs may vary.)

### Freshman Year

*First semester: 14 credits*

- 4 BIO 121 Human Anatomy
- 3 SOC 100 General Sociology
- 3 CHM 103 Introductory Chemistry Lecture
- 1 URI 101 Freshman Seminar
- 3 General Education requirement (Cw)

*Second semester: 16 credits*

- 3 BIO 242 Human Physiology
- 1 BIO 244 Human Physiology Laboratory
- 3 CHM 124 Introduction to Organic Chemistry
- 3 PSY 113 General Psychology
- 3 NUR 103 Professional Practice in Health and Illness
- 3 General Education requirement (C)

### Summer Session

3–6 General Education or free elective requirements (to reduce junior year requirements)

### Sophomore Year

*First semester: 16 credits*

- 4 MIC 201 Introductory Medical Microbiology
- 3 PSY 232 Developmental Psychology
- 3 NFS 207 General Nutrition
- 3 NUR 203 Comprehensive Health Assessment
- 3 STA 220 Statistics in Modern Society (or PSY 300 Quantitative Methods in Psychology)

*Second semester: 18 credits*

- 3 NUR 213 Pathophysiology
- 3 NUR 233 Foundations of Nursing Practice with Older Adults
- 3 NUR 234 Practicum in Foundations of Nursing with Older Adults
- 3 NUR 253 Nursing Research
- 3 General Education course
- 3 Free Elective

### Junior Year

*First semester: 18 credits*

- 6 NUR 323 Medical-Surgical Nursing
- 6 NUR 324 Practicum in Medical-Surgical Nursing
- 3 BPS 333 Nursing Pharmacology
- 3 Free Elective

*Second semester: 15 credits*

- 3 NUR 333 Psychiatric-Mental Health Nursing
- 3 NUR 334 Practicum in Psychiatric-Mental Health Nursing
- 3 NUR 343 Nursing in Childbearing and Reproductive Health
- 3 NUR 344 Practicum in Childbearing and Reproductive Health Nursing
- 3 General Education course

### Senior Year

*First semester: 15 credits*

- 3 NUR 433 Nursing of Children
- 3 NUR 434 Practicum in Nursing of Children
- 3 NUR 443 Community Health Nursing
- 3 NUR 444 Practicum in Community Health Nursing
- 3 General Education course

*Second semester: 15 credits*

- 3 NUR 463 Advanced Medical-Surgical Nursing
- 3 NUR 464 Practicum in Advanced Medical-Surgical Nursing
- 3 NUR 474 Leadership in Professional Nursing **[capstone]**
- 6 General Education courses

**Required Nursing Courses.** The following 63 credits are required: NUR 103, 203, 213, 233, 234, 253, 323 (6 credits), 324 (6 credits), 333, 334, 343, 344, 433, 434, 443, 444, 453, 463, 464, and 474. Students must maintain an overall minimum GPA of 2.20 in order to progress in the NUR courses.

**General Education Requirements and Electives.** The general education requirements must be completed with the exception that one of the following divisions may be reduced by three credits: fine arts and literature (A), letters (L), or foreign language and culture (F).

Six credits of free electives are required. A total of 127 credits is required for graduation.

**Minor in Thanatology.** For information on this interdisciplinary minor dealing with loss, death, and grief, please turn to page 39.

## COLLEGE OF PHARMACY

Donald E. Letendre, *Dean*

Joan M. Lausier, *Associate Dean*

E. Paul Larrat, *Associate Dean*

Entering freshmen are admitted to URI's six-year entry-level Doctor of Pharmacy (Pharm.D.) degree, described on the next pages. The college also awards two graduate degrees: the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) in pharmaceutical sciences, offered by both departments, Biomedical and Pharmaceutical Sciences and Pharmacy Practice.

The six-year Doctor of Pharmacy curriculum is patterned on accepted programs of study recommended by the American Association of Colleges of Pharmacy, the American Council on Pharmaceutical Education, and other interested organizations. The Doctor of Pharmacy is accredited by the American Council on Pharmaceutical Education (20 North Clark Street, Suite 2500, Chicago, Illinois, 60602; [acpe-accredit.org](http://acpe-accredit.org)).

Medication therapy management is the responsible provision of drug therapy to achieve specific outcomes that improve a patient's quality of life. A pharmacist, in cooperation with a patient and other healthcare professionals, designs, implements, and monitors a plan of care that will produce desired patient outcomes. A key element in medication therapy management is that the pharmacist accepts *personal responsibility* in achieving the desired outcomes. In learning to provide medication therapy management, pharmacy students must exhibit the highest level of ethical behavior and moral values in all of their decision-making, as well as in their actions both in and outside of the college. Furthermore, students must acknowledge that the profession and medication therapy management are based foremost on caring, trust, and communication for the benefit of patients and society in general. All students must be committed to maintaining these standards, to fostering the professional development of other pharmacy students, and to responding appropriately when the

ethical and moral standards of the profession have been breached.

Graduates of our program have a strong record of passing the national licensing examination (NABPLEX). Average scores over the past five years are in the 90 percentages, with scores for 2006 graduates taking the exam for the first time at 93%. The program in pharmacy provides preparation for community and institutional pharmacy practice. In addition, students have opportunities through the selection of professional electives to commence a specialization in one of several areas of pharmacy, including hospital, clinical, manufacturing, medical supply servicing, drug analysis, administration, and research.

A recent survey of alumni indicates that 62% work in a community practice setting, while 14% work in hospitals. Others work in the pharmaceutical industry (7%), long-term facilities (4%), HMO's (2%), federal agencies (2%), specialty areas (5%), and 4% work in academia. Job responsibilities vary from staff pharmacists, manager, clinical specialist, consultant, executive, to professor. Seventy-one percent agree that their educational experience at URI contributed to their leadership abilities in the profession.

Pharmacy students must request transfer from University College to the College of Pharmacy at the end of three semesters. Only those pharmacy students having a 2.50 grade point average or better in required preprofessional courses (CHM 101, 102, 112, 114, and 227; BIO 101, 121, 242, and 244; MTH 131; and MIC 201) with no grade less than C- in any of these courses, and an overall grade point average of 2.00 will be admitted at this time. Successful candidates must maintain a grade point average of 2.50 in prerequisite courses. Applicants with an average between 2.00 and 2.50 in these courses will be considered for admission on a competitive basis along with other URI undergraduate students and transfer students from other institutions at the end of four semesters. Applicants with a grade point average of less than 2.00 for the designated preprofessional courses will not be considered for admission to the

college. For purposes of admission among transfer applicants, all of the preprofessional courses listed above, plus CHM 226, 228, STA 307, and BCH 311 (or equivalent courses) must be completed. All applicants must have a 2.50 in these courses, and successful candidates will be competitively selected from the applicant pool.

Beginning in the professional curriculum third year (P1) students should have their own laptop computer for use in the classroom. There are lease and purchase options at the University Bookstore for interested students.

Unless otherwise indicated, courses offered by the college are restricted to pharmacy majors.

Students must earn a minimum grade point average of 2.00 overall and 2.20 in all professional courses in order to qualify for graduation in the Pharm.D. program. Students can repeat up to ten credits of pharmacy courses in which they received a C- or less in order to achieve the 2.20 GPA graduation requirement.

*The student whose cumulative GPA in professional courses falls below a 2.00 at the end of any semester will be dismissed from the program. Students will not be allowed to proceed into their sixth-year (P4) rotations without at least a 2.00 GPA in required professional pharmacy courses.*

Professional and/or legal exigencies arise from time to time which may necessitate changes in a pharmacy course, progression, and/or graduation requirements. Students should review their status with academic advisors on a timely basis and refer to current publications for updated information.

Students in certain other New England states may enroll in pharmacy under the New England Regional Student Program. (See page 32.)

Students desiring external transfer into the first professional year must complete the required preprofessional science and math course work with at least a 2.50 grade point average to be considered. Admission is highly competitive and seats may not always be available. Students may transfer credits for courses in which they have earned a C or better. Questions concerning

the transferability of specific courses and of the evaluation process should be directed to the associate dean of pharmacy.

*Please note:* at this time, external transfers are not being considered for admission to the professional curriculum (year 3).

## Faculty

*Biomedical and Pharmaceutical Sciences:* Professor Chichester, chairperson. Professors Cho, Kislioglu, Lausier, Letendre, Needham, Rodgers, Rosenbaum, Shaikh, Shimizu, Swonger, Yan, and Zia; Associate Professors Babson and Zawia; Assistant Professors Akhlaghi, Deng, King, Parang, and Rowley.

*Pharmacy Practice:* Professor Owens, chairperson. Professors Barbour, Dufresne, Hume, Larrat, and Tempkin; Associate Professor Pawasauskas; Assistant Professors Bratberg, Charpentier, Cohen, Cowles, Feret, Goren, Kogut, LaPlante, Lin, MacDonnell, Marcoux, Matson, Mersfelder, Orr, Taveira, Tortora, Quilliam, and Ward.

## Six-year Entry Level Pharm.D. Curriculum Requirements

A total of 189 credits is required for graduation. Proficiency in the American Red Cross standard first aid and community CPR is also expected of each student prior to graduation. Prior to advanced practice experiences, students must be certified in physical assessment.<sup>1</sup>

### First Year

#### First semester: 15 credits

CHM 101 (3), 102 (1); COM 100 or WRT 104 or 105 (3); BIO 101 (4); one 3-credit elective (3); and URI 101 (1).

#### Second semester: 17 credits

CHM 112 (3), 114 (1); MTH 131 (3); COM 100 or WRT 104 or 105 (3); BIO 121 (4), and one 3-credit elective (3).

### Second Year

#### First semester: 17 credits

CHM 227 (3); ECN 201 (3); MIC 201 (4); BIO 242 (3), 244 (1), and one 3-credit elective.

#### Second semester: 17 credits

BCH 311 (3); CHM 228 (3), 226 (2); STA 307 (3), and 6 credits of electives.

#### First Professional Year (P1)

##### First semester: 14 credits

PHP/BPS 311 (2), BPS 301 (2), 303 (2), 305 (2), 313 (2), 318 (1), 321 (2); PHC 317 (1)<sup>2</sup>; and PHP 350 (0).

##### Second semester: 16 credits

PHP/BPS 312 (2); BPS 322 (2), 325 (2), 326 (1); PHP 324 (2), 316 (3), 351 (0), PHC 327 (1)<sup>2</sup>, and one 3-credit elective.

#### Second Professional Year (P2)

##### First semester: 14 credits

PHP/BPS 409 (2); BPS 416 (1), 421 (2); PHP 413 (2), 450 (0); BPS/PHP/STA 411 (3); NFS 444 (3); PHC 417 (1)<sup>2</sup>.

##### Second semester: 15 credits

PHP/BPS 410 (4), BPS 403 (3), 422 (2); PHP 414 (2), 451 (0); Professional Tracking (3); PHC 427 (1)<sup>2</sup>.

#### Third Professional Year (P3)

##### First semester: 17 credits

BPS/PHP 504 (3), 515 (1), 518 (3); BPS 521 (2); PHP 503 (2), 513 (2); PHC 517 (1); and Professional Tracking (3).

##### Second semester: 17 credits

PHP/BPS 510 (2), 516 (1); BPS 522 (2); PHP 504 (3), 514 (2); PHC 527 (1)<sup>2</sup>; and Professional Tracking (6).

#### Fourth Professional Year (P4)

##### First semester: 15 credits

##### Second semester: 15 credits

To complete the curriculum, students must complete PHP 591, 592, and 593 (Clinical Clerkships, 5 credits each) plus PHC 594

(Tracking Practicum, 5 credits) during the sixth year (P4) in any sequence. These are all **capstone** experiences in the program.

**Doctor of Pharmacy Degree Tracks.** As part of URI's professional degree program, students will select professional course work in areas of individual interest. This is an opportunity to focus in a particular area of practice through the completion of 12 credits of course work and a focused advanced practice experiential rotation (PHC 594). Students in the community practice, pharmacotherapy, pharmacoepidemiology/pharmacoeconomic, or research track will be assigned an additional track advisor in their area of concentration.

## PHARMACY PRACTICE

The Department of Pharmacy Practice offers a diverse selection of elective course work that allows students to select from a wide variety of practice areas, or more focused practice areas such as **community practice, pharmacotherapy, pharmacoepidemiology, pharmacoeconomics, or drug information and technology.**

Students selecting the **pharmacy practice** track have the most discretion in selecting professional course work. Students in the pharmacy practice track may take any four College of Pharmacy elective courses (for a total of 12 credits) or choose from the following selection: PHP 430, 440, 460, PHP/BPS 519, 520, 540, 542, 550, 555, 560, 580; PHC 305; HSS 530; WRT 333; PSY 460; NFS 551 and 552; and MSI 310. Students in the pharmacy practice track will complete an advanced practice rotation (PHC 594) in any area of practice of their preference.

Students interested in **community practice** are encouraged to take PHP 440, Pharmaceutical Care for Special Populations; PHP/BPS 519, Self Care II; and PHC 594 in an area of advanced community practice. Students may select their other two courses from any of the other professional electives offered by the college or from those listed above. Students who focus their elective courses in this way can have

the "Community Practice Track" distinction listed on their transcript.

Students interested in **pharmacotherapy** are encouraged to take at least two courses from the following: PHP 430, Advanced Infectious Diseases and Pulmonary Pharmacotherapy; PHP 460, Palliative Care; PHP 520, Advanced GI and Endocrine Pharmacotherapy; PHP 555, Advanced Neuropsychiatric Pharmacotherapy or PHP 560, Advanced Cardiovascular and Renal Pharmacotherapy; and PHC 594 in an area of specialized pharmacotherapy practice. The remaining two courses may be selected from any professional elective offered by the college or from the Pharmacy Practice electives listed on the previous page. Students who focus their elective courses in this way can have the "Pharmacotherapy Track" distinction listed on their transcript.

Students interested in **pharmacoepidemiology** and/or **pharmacoeconomics** are encouraged to take at least two courses from the following: PHP 540, Principles, Methods, and Applications of Epidemiology; PHP 550, Pharmacoepidemiology; PHP 580, Pharmacoeconomic Analysis; and PHC 594 in an area that focuses on the application of pharmacoeconomics or pharmacoepidemiology. The remaining two professional courses may be selected from the pharmacy practice electives listed on the previous page or any other College of Pharmacy elective courses. Students who focus their elective courses in this way can have the "Pharmacoepidemiology/Pharmacoeconomics Track" distinction listed on their transcript.

Students interested in **drug information and technology** are encouraged to take PHC 305 and MIS 310, and PHC 594 in an area of drug information. The remaining two courses may be selected from any College of Pharmacy professional course or from the pharmacy practice electives listed on the previous page. Students who focus their elective courses in this way can have the "Drug Information and Technology Track" distinction listed on their transcript.

#### BASIC RESEARCH

The Department of Biomedical and Pharmaceutical Sciences offers a research track for highly motivated students. Students will focus on learning the theory and practice of laboratory research techniques, the evaluation and quantification of results, and on understanding and interpreting scientific literature. They will develop skills for oral and written communication of hypotheses, methods, and interpretations, and will carry out basic scientific research in one of the following four areas of specialization: medicinal chemistry and pharmacognosy, pharmaceutics and pharmacokinetics, pharmacoepidemiology and pharmacoeconomics, or pharmacology and toxicology. Students will develop a program of study in conjunction with a faculty advisor in their area of interest. All students will take at least 12 credits of course work at the graduate level. During the last year of study, students will take PHC 594—under the direction of a faculty member—as their tracking experience. Students who focus their elective courses in a manner consistent with their program of study in one of the areas of research outlined below can have the "Research Track" distinction listed on their transcript.

Students in the basic research track may also be able to apply and work toward an M.S. degree in one of the following areas of study:

**Medicinal Chemistry and Pharmacognosy:** Molecular mechanisms of chemical carcinogenesis; combinatorial chemistry; solid-phase peptide synthesis; screening, isolation, and structure elucidation of physiologically-active natural products; biosynthesis of microbial and plant natural products; herbal medicine.

**Pharmaceutics and Pharmacokinetics:** Design, development, production, evaluation, and regulatory approval of pharmaceutical and self care products as well as pharmacokinetic and pharmacodynamic

studies using virtual, clinical, and preclinical data, often with an emphasis on population approaches.

**Pharmacoepidemiology and Pharmacoeconomics:** Health and economic outcomes research pertaining to pharmacotherapy as used in human populations. Specializations include medication adherence, decision and cost-effectiveness analyses, post-marketing surveillance, epidemiologic methods, and quality improvement and measurement.

**Pharmacology and Toxicology:** Research projects explore the mechanisms involved in various disease states and their pharmacological intervention, and mechanisms of toxicity of various environmental agents. Ongoing topics include the effects of hormonal imbalances and antihypertensive agents on cardiac function and metabolism in hypertension, diagnosis and treatment of arthritis, effect of septic shock on drug metabolism, developmental neurotoxicity of environmental agents, hepatotoxicity and nephrotoxicity of heavy metals, interindividual variation in metabolism of heterocyclic amine carcinogens, regulation and genetic heterogeneity of enzymes involved in drug and xenobiotic metabolism, calcium- and non-calcium mediated pathways of cell death, and the development of inhibitors to cell signaling events.

#### Double Major in Pharmacy and French.

Qualified students can graduate in six years with both a Pharm.D. degree and a B.A. degree in French. Students must complete at least two five-week rotations in a French-speaking country and earn 30 credits of French, six of which must be from 400- level courses. French 101 and 102 do not count among the mandatory 30 credits. It is recommended that students wishing to double major come to URI with four years of high school French and advanced placement credits.

<sup>1</sup> PHP 900

<sup>2</sup> Interactive learning courses will be shared by PHP and BPS under the code of PHC.

# GRADUATE ADMISSION AND REGISTRATION

Persons holding the baccalaureate degree and wishing to take graduate-level courses at the University may do so through admission to the Graduate School.

## GRADUATE SCHOOL

Lynn Pasquerella, *Vice Provost for Graduate Studies, Research and Outreach*  
 Harold D. Bibb, *Associate Dean, Graduate School*  
 Judy K. Beckman, *Associate Dean, Graduate School*

### Admission

Students may be admitted to URI's Graduate School as degree candidates or they may pursue postbaccalaureate work in nonmatriculating status (see next page). Admission to the Graduate School is based on academic qualifications and potential without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and without discrimination against disabled and Vietnam era veterans.

Application forms can be downloaded at [uri.edu/gsadmis](http://uri.edu/gsadmis), or prospective students may apply directly online via a link from the same location. If the online application is used, all supporting materials (application fee, transcripts, letters of reference, etc.) must be sent as a complete package to the department or program to which admission is sought. Inquiries concerning particular degree programs or courses of instruction should be addressed to the appropriate department chairperson or the graduate program director, as listed in the "Graduate Programs" section of this catalog.

The completed application package must be sent directly to the department or program to which admission is sought. Final decisions rest with the Graduate School, which, after considering the recommendation of the department concerned, will notify the applicant of the decision.

Where admission to a doctoral program is possible for those holding the bachelor's degree and meeting other requirements, the Graduate School reserves the right to offer admission only to the master's program while postponing a decision on admission to the doctoral program until at least a substantial portion of the master's work has been completed.

Applications must be accompanied by a \$50 nonrefundable application fee. Simultaneous application to more than one department requires duplicate applications and credentials and separate application fees.

The completed application package and all supporting documents must be received by April 15 for summer admission, July 15 for fall admission, and November 15 for spring admission (dates for international applicants are below). The application package must be received by February 1 for consideration for financial aid for the following year. As indicated in the "Graduate Programs" section in this catalog, certain programs admit students only for the fall semester or have earlier deadlines. There is no assurance that applications completed after specified deadlines will be processed in time for enrollment in the desired semester. Admission is valid only for the term offered and must be reconsidered if a postponement is subsequently requested.

**International Applicants.** Applicants from foreign countries must complete the Test of English as a Foreign Language (TOEFL) with a minimum score of 550 (or 213 on the computer-based TOEFL exam) unless a higher minimum is listed under the admission requirements for the specific program. Required minimum scores on the new Internet-based TOEFL (iBT) are: Reading 20,



**Transfer Credit.** Transfer credit can be requested for graduate work taken at other accredited institutions of higher learning. Under usual circumstances, such credits may not exceed 20 percent of the total credits required in the program. Doctoral candidates holding a master's degree in the same or a closely related area can request up to 30 credits from their master's degree. The transfer work must have been taken at the graduate level (equivalent to the 500 level or higher in URI's course numbering system) and a passing grade earned at that institution. It must have been completed not more than five years prior to the date of admission into a master's program (ten years for the doctoral program) and must have a clear and unquestioned relevance to the student's program of study. The request for transfer credit should be accompanied by a proposed program of study and must have the approval of the student's major professor and the Graduate School. If transfer credit is desired for work taken elsewhere after a graduate student is enrolled at the University, *prior approval* must be obtained from the Graduate School.

**Degree Candidates.** Applicants must forward the completed application package, containing *all* of the requested materials, directly to the department to which admission is being sought. Where required, test scores in the appropriate nationally administered tests should be sent directly to the department by the testing service. Tests required for specific programs can be found in the "Graduate Programs" section. Scores (GRE, MAT, or GMAT) earned more than five years prior to the term of application will not be accepted. If test results exceed the five-year limit, applicants must retake the examination.

To be accepted as graduate degree candidates, applicants must have maintained an average of approximately B (3.00 on a 4.00 scale) or better in their undergraduate work. For programs that require standardized tests, students must also have satisfactory scores on the appropriate nationally administered test. Applicants with undergraduate averages below the

B level may possibly be admitted with submission of other evidence of academic potential; i.e., satisfactory performance in postbaccalaureate work, professional experience as evidenced by publications or letters of recommendation, and/or high scores in the standardized tests referred to above. All students are expected to maintain a cumulative average of B (3.00) or better. Students who do not maintain a cumulative B average will have their status reviewed and may be placed on provisional status or be dismissed. A student placed on provisional status must achieve a cumulative B average within one semester (or nine credits, if part time) or be subject to dismissal.

**Advanced Standing.** Advanced standing refers to credits taken at URI by a nonmatriculating student, by a matriculating student while on nondegree status, or by a student in one degree program before acceptance to any other degree program. Credits earned at the University of Rhode Island by a nonmatriculating student may be applied as advanced standing toward degree requirements only upon the recommendation of the student's major professor and the graduate program director and with the approval of the Graduate School. For the credits to be applied to advanced standing, they must have been earned within a five-year period before the student matriculated into the degree program. For a master's degree program, advanced standing and transfer credit may not total more than 40 percent of the credits required for the degree. For Ph.D. candidates admitted without a master's degree, advanced standing may not total more than 20 percent of the credits required for the degree. In special cases, Ph.D. candidates admitted with a master's degree in the same or a closely related area may request up to nine credits of advanced standing. The request should be accompanied by a proposed program of study and satisfy the time constraints listed for transfer credit.

In certain cases, applicants who have been denied admission may be advised to take several courses in nonmatriculating status (see following paragraph) to

provide a basis for later reconsideration of their applications. In such cases, these courses are usually regarded as if they were entrance deficiencies and are not accepted for advanced standing in minimum-credit programs of study.

**Nonmatriculating Status.** Individuals holding a bachelor's degree who are not candidates for an advanced degree may take courses during the academic year or in the summer in nonmatriculating status. Normally, to take courses for personal satisfaction or professional advancement, postbaccalaureate students enroll in the Alan Shawn Feinstein College of Continuing Education. Any nonmatriculated student wishing to take courses on the Kingston Campus must file an application with the Office of Enrollment Services. If nonmatriculated students later wish to be admitted to a degree program, they must complete the regular admission procedure.

Nonmatriculated students do not have the privileges regularly enjoyed by degree candidates. For example, on the Kingston Campus they may not register until one week before classes begin and must make payment before accessing the registration system. Their enrollment is subject to the accommodation of degree candidates wishing to take these courses. In addition, there is a limit to the number of courses taken in this status that may be used as advanced standing to satisfy degree requirements. Nonmatriculated students are not eligible for financial aid.

## Registration

The responsibility for being properly registered rests with the student. Students must complete their registration within the time period announced by the University in the *Schedule of Courses*. The chairperson of the student's major department will assign an advisor to assist the new graduate student in planning a program. All students must register for courses through the Office of Enrollment Services in order to be properly enrolled.

For information on late registration, schedule of courses, payment of fees, drop and add, auditing, Veterans Administration educational benefits, transcripts, change of address, and required identification, please see the section on undergraduate registration, page 26-27.

**Early Registration.** Matriculated (official degree-seeking) students who meet the eligibility requirements as defined in the *Schedule of Courses* generally register in April and October for the following semester. The *Schedule of Courses* is available at [uri.edu](http://uri.edu).

**Summer Session.** Although some graduate-level courses are offered during the summer sessions, the University does not guarantee that any particular course will be offered. The availability of individual faculty members to supervise research or to participate in comprehensive examinations and in examinations in defense of theses or dissertations during the summer sessions varies from year to year. During the summer sessions, special arrangements must be made with both the Graduate School and the department for scheduling comprehensive examinations and thesis or dissertation defenses. Students must be registered to be eligible to schedule these exams. Graduate students must make prior individual arrangements for taking directed studies or special problems courses.

**Time Limit and Continuous Registration.** Graduate students are expected to complete their course work and research within the five-year time limit prescribed for the master's degree and the seven-year time limit for the doctorate. The time limit for a degree program may be extended for legitimate reasons such as military service or serious illness. An application to the Graduate School requesting such an extension requires the endorsement of the student's graduate program director or department chairperson (see the *Graduate Student Manual*, sections 7.42 and 7.51).

Graduate students must remain continuously enrolled—except for summer sessions, which are optional—until they have completed all requirements and have received their degree. Unless they are on a leave of absence approved by the department and the Graduate School, students who wish to maintain graduate status must pay the continuous registration fee each semester until the degree has been awarded, even if they do not require use of any University resources and are not registered for course work or research.

Students who are on a leave of absence or are on continuous registration do not have the privileges of consulting regularly with faculty on research or thesis preparation, nor of using laboratory, computer, or other educational facilities at URI. Students on continuous registration are not eligible for continuation of educational loan deferments based on student status.

A student who does not register for a semester, or obtain approval for a leave of absence, will be considered as having voluntarily withdrawn from the University. Students who are later permitted to re-enroll must pay the continuous registration fee for each semester in which they did not maintain graduate status.

#### Full-Time and Part-Time Students.

Minimum full-time registration is nine credit hours during a regular semester and six credit hours during a summer session. Maximum registration of 15 credit hours during a regular semester and eight credits during each summer term may not be exceeded without prior written permission of the Graduate School, based on extraordinary circumstances. (Students on graduate teaching and research assistantships are limited to a minimum of six and a maximum of 12 credits.) Credits in excess of 15 will be billed at the per-credit rate. Full-time registration is required of all international students and of all students holding fellowships, assistantships, full scholarships, and traineeships administered by the University.

**Credits Earned Off Campus.** Students wishing to register for credits to be counted toward a degree, who will be earning these credits through off-campus activities (such as research or independent study at a national laboratory), must obtain prior approval from the Graduate School to have these activities listed as part of their programs of study.

**Intellectual Opportunity Plan (Pass-Fail Option).** To allow graduate students to venture into new areas of knowledge without fear that their scholastic average will suffer, the Graduate Council has approved the Intellectual Opportunity Plan. (Please note that courses below the 400 level are automatically excluded from the scholastic average.) To be eligible for this option, the student's major professor or advisor must certify that the course or courses are outside the student's major field of study, are not entrance deficiencies, and are not specific requirements of, but are relevant to, the student's program. A maximum of four credits may be taken by the master's degree candidate and a maximum of eight credits, including any taken as a master's candidate, by the doctoral candidate. Deadlines to participate in this plan are published in the *Schedule of Courses*.

## 2007-2008 Calendar for Graduate Degree Candidates

### Fall Semester 2007

**September 4, Tuesday.** New Graduate Student Orientation.

**September 5, Wednesday.** Classes begin, Kingston campus.

**September 28, Friday.** Deadline for December master's degree candidates and May doctoral degree candidates to submit thesis proposals.\*

**October 5, Friday.** Final date for nominations for December graduation.

**November 12, Monday.** Deadline for applications for Spring 2008, except for programs with earlier deadlines.

**November 16, Friday.** Final date for December candidates to submit completed defense copies of master's and doctoral theses in a form acceptable for examination purposes along with the request for oral defense of thesis. NO EXTENSIONS OF TIME CAN BE GRANTED. *Theses must be submitted at least 20 calendar days prior to the date requested for oral defense.*

*Selection of date should allow sufficient time for necessary revisions and retying before submission in final form. See December 14 deadline and note at the end of the calendar on the next page regarding scheduling examinations during the winter intersession.*

**December 10, Monday.** Classes end. Programs of study due for students admitted for Fall 2007.

**December 14, Friday.** Final date for December degree candidates to submit, in final form, master's and doctoral theses that have been successfully defended. NO EXTENSIONS OF TIME CAN BE GRANTED.

**December 26, Wednesday.** Final date for changes of grade, changes to programs of study, results of comprehensive exams, etc. for December degree candidates to be received in the Graduate School office for certification for December graduation. NO EXTENSIONS OF TIME CAN BE GRANTED.

### Spring Semester 2008

**January 21, Monday.** Classes begin, Kingston Campus.

**February 1, Friday.** Final date for admissions applications from individuals seeking financial aid for 2008. Applications for financial aid received subsequent to this date cannot be assured of full consideration.

**February 8, Friday.** Deadline for May master's degree candidates and August doctoral degree candidates to submit thesis proposals.\*

**February 15, Friday.** Final date for nominations for May graduation.

**March 3, Monday.** Final date for nominations from departments for fellowships and scholarships.

**March 28, Friday.** Final date for May degree candidates to submit completed defense copies of master's and doctoral theses in a form acceptable for examination purposes, along with the request for oral defense of thesis. NO EXTENSIONS OF TIME CAN BE GRANTED. *Theses must be submitted at least 20 calendar days prior to the date requested for oral defense. Selection of date should allow sufficient time for necessary revisions and retying before submission in final form. See the April 25 deadline.*

**April 4, Friday.** Application deadline for summer 2008 admissions, except for programs with earlier deadlines.

**April 11, Friday.** Deadline for August master's degree candidates and December doctoral degree candidates to submit thesis proposals.\*

**April 22, Tuesday.** Deadline for submission of nominations for August degree candidates who wish to be listed in the commencement program.

**April 25, Friday.** Final date for May degree candidates to submit, in final form, master's and doctoral theses that have been successfully defended. NO EXTENSIONS OF TIME CAN BE GRANTED.

Final date for changes to programs of study, results of comprehensive exams, etc. for May degree candidates to be received in the Graduate School office for certification for May graduation. NO EXTENSIONS OF TIME CAN BE GRANTED.

**April 28, Monday.** Classes end. Programs of study due for students admitted for Spring 2008.

**May 15, Thursday.** Final date for changes of grade for May degree candidates to be received in the Graduate School office for certification for May graduation. NO EXTENSIONS OF TIME CAN BE GRANTED.

**May 17, Saturday.** Commencement. Also see the University Calendar on page 3 and Summer Session Calendar on the next page.

\* *Thesis proposals should be submitted before or during the first semester in which the student registers for research credits.*

## 2008 Summer Sessions for Graduate Degree Candidates

**NOTE:** All courses taken by graduate students during summer sessions are subject to the same regulations regarding inclusion in programs of study and calculation of overall academic average, etc., as courses taken during the regular academic year. Students wishing to take directed studies or special problems courses during summer sessions must obtain individual approval for these courses from the Continuing Education office unless the specific offering is listed in the summer schedule of courses for that year. Students wishing to enroll for thesis or dissertation research during summer sessions must first determine that their major professors and/or members of their thesis or dissertation committees will be available and are willing to provide the necessary supervision. See also the important note at the end of this calendar regarding scheduling of examinations, including defense of theses, during summer sessions. See the schedule of summer courses available online at [uri.edu](http://uri.edu) or at the office of the College of Continuing Education.

### Session I: May 19–June 16

**May 19, Monday.** Classes begin.

**June 2, Monday.** Final date for nominations for August graduation.

**Week of June 16.** Classes end. Exams.

### Session II: June 23–July 21

**June 23, Monday.** Classes begin.

**July 3, Thursday.** Final date for all August degree candidates to submit completed defense copies of master's and doctoral theses in a form acceptable for examination purposes, along with the request for oral defense of the thesis. NO EXTENSIONS OF TIME CAN BE GRANTED. *Theses must be submitted at least 20 calendar days prior to the date requested for the oral defense. Selection of date should allow sufficient time for necessary revisions and retying before submission in final form. See August 1 deadline.*

**July 11, Friday.** Deadline for Fall 2008 applications, except for programs with earlier deadlines.

**Week of July 21.** Classes end. Exams.

**August 1, Friday.** Final date for all August degree candidates to submit, in final form, master's and doctoral theses that have been successfully defended. NO EXTENSIONS OF TIME CAN BE GRANTED.

Final date for changes of grade, changes to programs of study, results of comprehensive exams, etc. for August degree candidates to be received in the Graduate School office for certification for August graduation. NO EXTENSIONS OF TIME CAN BE GRANTED.

**IMPORTANT:** Requests for scheduling exams must be submitted to the Graduate School office at least 20 calendar days prior to the date(s) requested. Theses and dissertations must be distributed to members of the examining committee at least 15 days prior to the date of the defense. Oral and written (including qualifying and comprehensive) exams and defenses of theses will be scheduled only at the convenience of the faculty

members involved and depending on the availability of the candidate's program committee and additional qualified examiners. Such exams will not be scheduled during periods when the University is in recess. Students wishing to take any exams should first check the availability of the faculty members. Each faculty member must initial the request to indicate his or her willingness to serve. Faculty should be consulted well in advance for exams being scheduled during the winter intersession and summer sessions. If they are not registered for course work or research during the summer sessions, students must register for one credit of research to defend theses, or for continuous registration to take the other exams. Please note that persons on continuous registration have neither the privilege of consulting regularly with professors about research or thesis preparation, nor the privilege of using the University's laboratories, computers, or other educational facilities (except for libraries).

# GRADUATE PROGRAM REQUIREMENTS



Each advanced degree awarded by the University requires as a minimum the successful completion of a specified number of approved credits of graduate study at the University and the passing of prescribed examinations. Credit hours for a master's or doctoral degree may include formal course work, independent study, research, preparation of a thesis or dissertation, and such other scholarly activities as are approved by the candidate's program committee and the Graduate School.

*It is the student's responsibility to know the calendar, regulations, and pertinent procedures of the Graduate School and to meet its standards and requirements.* These are set forth in this catalog, the *Graduate Student Manual*, the *Statement on Thesis Preparation*, and other publications, all of which are available to graduate students at the Graduate School Office and at [uri.edu/gsadmis](http://uri.edu/gsadmis). These documents are also available in some department offices. The student manual is available at the library and, for a fee, at commercial centers in Kingston.

These documents govern both master's and doctoral degree programs. The student manual gives detailed information on responsibilities of major professors and program committees, examination procedures, preparation of theses and dissertations, academic standards, and the Graduate Student Academic Appeals System.

The requirements immediately following are *general requirements* for all graduate students. *Specific requirements* for individual programs are itemized in the Graduate Programs section that follows.

## Program of Study

The purpose of the program of study is to ensure that students, at an early stage in their graduate study, organize coherent, individualized plans for their course work and research activities. It is expected that the successful completion of students' programs of study along with collateral readings, research, etc., will enable them to demonstrate that they have achieved the high level of competence required of graduate students in their respective fields.

All degree candidates are required to prepare a program of study with the guidance of their major professors (for master's degree programs) or of their program committees (for doctoral programs) in accordance with the guidelines in the *Graduate Student Manual*. After the program has been approved by the major professor or by the program committee, the program of study is submitted for approval to the Graduate School.

## Course Numbering System

All regular graduate courses are numbered at the 500 and 600 levels. All 900-level courses are special graduate courses for which no graduate program credit is given. Courses numbered at the 400 level are for advanced undergraduates, but may, with approval and to a limited extent, be accepted toward meeting degree requirements at the master's level. For doctoral candidates who have completed the master's degree in the same field or one closely related, all program work must be at the 500 or 600 level.

## Scholastic Standing

Graduate work is evaluated by letter grades. All grades earned will remain on the student's record, and unless the courses were approved for no program credit prior

to registration, all unacceptable grades will be included in calculating the student's scholastic average.

A grade of C+ (2.33) or lower in courses numbered at the 400 level is considered a failing grade. In such cases of failure the course must be either repeated, if it is a required course, or else replaced by another course approved by the candidate's program committee and the Graduate School. When students receive more than one grade of C+ (2.33) or lower in courses at the 400 level, their graduate status is subject to review by the Graduate School.

Grades of C- or lower are failing grades in courses at the 500 and 600 levels and require immediate review of the student's status. Students failing these courses must repeat them, if they are required courses, or else they must replace them with courses approved by the candidate's program committee and the Graduate School.

The grades S (satisfactory) and U (unsatisfactory) are used for courses of study involving research undertaken for the thesis or dissertation and for certain courses and seminars so designated. The letter I (incomplete) is used for excused unfinished work. Graduate students have one year to make arrangements with the instructor to remove the incomplete. If the grade of I (incomplete) is not removed within three calendar years, it will remain on the transcript. Incomplete grades may not be used for program credit. Grades of S, U, I, and all grades in courses below the 400 level are not included in the academic average.

To qualify for continuation of degree candidate status and for graduation, a cumulative average of B (3.00 on a 4.00 scale) in all work is required, except for courses meeting entrance deficiencies or approved for no program credit prior to registration in the course. At any time when the academic record indicates unsatisfactory performance, the student's status is subject to review. A student who fails to maintain a satisfactory grade point average or to make acceptable progress toward the degree may be dismissed as a graduate student.

## Degree Requirements

**Master's Degree.** There are no major or minor area requirements for the master's degree. However, no degree can be awarded for the accumulation of credits without a planned and approved program of study. Courses for the degree are expected to be concentrated in the candidate's field of interest and related areas to produce a well-developed and coherent program.

The requirements listed here must be met within five years after the date the candidate is first enrolled as a graduate student at the University. With the submission of a written request for an extension and a schedule for completion, endorsed by the major professor and the graduate program director, a specific, time-limited extension may be approved by the Graduate School. The master's degree may be earned through full- or part-time study, or a combination of the two.

Some departments offer both a thesis and a nonthesis option, while others offer only one plan. Please refer to the "Graduate Programs" section for specific information on each program. General requirements for these options are as follows.

*Thesis Option.* The minimum requirements for a master's degree are 1) the successful completion of 30 credits, including six to nine thesis research credits; 2) at the discretion of the department, the passing of written comprehensive examinations toward the end of the course work; 3) the submission of an acceptable thesis and the passing of an oral examination in defense of the thesis. Four copies of the thesis prepared in accordance with Graduate School requirements must be submitted to the Graduate School Office. A statement on the preparation of theses is available from that office.

*Nonthesis Option.* Depending on departmental requirements, some master's degrees may be earned without a thesis. The minimum requirements for a nonthesis master's degree program are: 1) the successful completion of a minimum of 30 credits;

2) completion of practicums, internships, or other experiences useful to the student's future professional career; 3) registration in one course that requires a substantial paper involving significant independent study; 4) the passing of a written comprehensive examination toward the end of the course work. Some departments may also require a final oral examination.

*Research Competency.* Although not normally required for the master's degree, a student's major professor or thesis committee may require proficiency in a foreign language, statistics, or computer science where appropriate for the subject chosen.

**Professional Degrees.** Students should refer to the specific program requirements for professional degrees and consult with the appropriate dean or director.

**Doctor of Philosophy Degree.** The Doctor of Philosophy degree must be completed within seven years of the date when the student first enrolled as a candidate.

The requirements for the doctoral degree are 1) the completion of a minimum of 72 credits of graduate study beyond the baccalaureate degree, of which a minimum of 42 credits must be taken at the University of Rhode Island; 2) the passing of a qualifying examination; 3) if required by the department, proficiency in one or more foreign languages and/or in an approved research tool; 4) the passing of a comprehensive examination; 5) the completion of a satisfactory dissertation; 6) the passing of a final oral examination in defense of the dissertation; and 7) fulfillment of the residence requirement by taking a minimum of six credits per semester (specific graduate programs may require more) for at least two consecutive semesters after satisfying qualifying examination requirements. Residence is interpreted as attendance on campus or in the Alan Shawn Feinstein College of Continuing Education during a regularly scheduled semester. Full-time registration for both terms of a summer session counts as one semester of residence.

The department in which the student studies for the doctoral degree may or may not require a master's degree preliminary to, or as part of, the regular course of study.

*Qualifying Examination.* This examination is intended to assess a student's potential to perform satisfactorily at the doctoral level. A student without a master's degree who is accepted as a doctoral candidate is expected to take a qualifying examination, usually after 24–30 credits have been completed. A student who holds a master's degree in the same or a closely related field is normally not required to take the examination. If an examination is required, it will be stipulated at the time of admission.

*Research Competency.* Each department, in cooperation with the Graduate School, is authorized to formulate and to amend its own requirements and methods of testing for competency in research tools such as foreign language(s), computer science, or statistics. The department may, in turn, delegate this responsibility to the program committee for each individual doctoral candidate.

*Comprehensive Examination.* Each doctoral candidate will take comprehensive examinations at or near but not later than 12 months after completion of the formal courses stipulated in the program of study. The examination is designed to assess the student's intellectual capacity and adequacy of training for scholarly research.

The comprehensive examination consists of two parts: written and oral. The student, with the approval of his or her program committee, applies to the Graduate School to take the examination. The oral examination committee includes the student's committee and two additional members of the graduate faculty appointed by the Graduate School. One of the additional members represents a field of study allied to that of the student's major. The candidate's major professor arranges for and chairs the examination. Unanimous approval by the examining committee is required for the passing of the comprehensive examination.

A candidate whose performance fails to receive unanimous approval may, with the committee's recommendation and the approval of the Graduate School, be permitted one re-examination in the part or parts failed, to be taken no sooner than ten weeks and no later than one year after the initial examinations.

*Final Oral Examination.* This examination is a defense of the dissertation and is open to all members of the faculty and, generally, to all students. The examination, usually a maximum of two hours, is conducted by an examining committee made up of the candidate's program committee and two additional graduate faculty members appointed by the Graduate School. One of the appointed members will be designated by the dean to chair the examination.

Unanimous approval of the examining committee is required for passing. If the candidate does not perform satisfactorily, the committee may recommend to the Graduate School that the candidate take one re-examination under stated conditions.

## Theses and Dissertations

For the oral defense, a sufficient number of completed copies of the thesis or dissertation, acceptable in form and substance to each member of the examining committee and the Graduate School, is required. At least 20 calendar days prior to the proposed defense, the copies must be submitted to the Graduate School for scheduling of the examination.

Following a successful defense, and after all changes and corrections have been made, four copies prepared in accordance with requirements of the Graduate School and the library must be submitted to the Graduate School Office. Doctoral candidates must submit an additional abstract, not exceeding 350 words.

Students are advised to consult the *Statement on Thesis Preparation and Instructions for Thesis Defense*, both available in the Graduate School Office (and at [uri.edu/gsadmis](http://uri.edu/gsadmis)), and the most recent edition of Kate L. Turabian's *A Manual for Writers of Term Papers, Theses, and Dissertations*, published by the University of Chicago Press.

# GRADUATE PROGRAMS

This section describes the admission and degree requirements for the University's graduate programs, which are included within the general requirements set forth previously, and do not reduce those requirements.

The specific program requirements that follow are also minimum requirements; additional course credits may be required for candidates whose academic background is considered insufficient.

For example, in nonthesis master's degree programs, all students must take at least one course requiring a substantial paper involving significant independent study, and all Ph.D. candidates who do not hold an earned master's degree in a closely related field are required to take the Ph.D. qualifying examination even if it is not listed in the individual program requirements.

The standardized test scores admission requirement is also specific to each particular program. For programs requiring a standardized test, applications will not be reviewed until scores have been received. In all other cases, scores may be submitted if applicants believe the test results will enhance their application. However, the test results should be submitted as early as possible. If an application package is received before test results, the admission decision may be made without the scores.

Successful completion of any course of study at URI does not guarantee that the student will find either a specific kind or level of employment. Graduate students interested in the career opportunities related to their program of study are encouraged to discuss their interests with the appropriate department chair or director of graduate studies, the Graduate School's dean, or Career Services staff. Students uncertain about career choices are also invited to use the services offered by the Counseling Center.

The availability of these programs of study and areas of specialization, administrative locations, requirements, and titles, are subject to change without notice.

*For information on the background of your program's faculty, turn to the directory in the back of this catalog or visit [www.uri.edu](http://www.uri.edu).*

## Accounting

M.S.  
401-874-5000

*Faculty:* Professor Schwarzbach, *director of graduate studies.* Professors Beckman, Martin, and Matoney; Associate Professors Boyle and Hazera; Assistant Professors Graham, Jervins, and Blanthonne.

## Master of Science

The Master of Science in accounting program is appropriate for students with a variety of educational backgrounds and professional interests. The program's objective is to provide an accounting and business foundation for the student with an undergraduate degree in an area other than accounting. These students graduate with a strong theoretical understanding of accounting along with the necessary technical background. They are equipped to perform exceedingly well in entry-level positions in accounting. An objective for students with undergraduate degrees in accounting is to provide a fifth year of conceptual, theoretical, and technical education in accounting, finance, management science, and other areas where the student and program director feel the student can gain the most toward achieving his or her educational objectives.



An applicant with a bachelor's degree in accounting from an accredited institution can complete the program of study in one year. Applicants with no prior education in business will need to spend two years in full-time study or longer if studying part-time. The course of study is divided into two parts. Part one is a common body of knowledge in business and accounting that is required for all students without a bachelor's degree in business. The student's undergraduate record is evaluated, and common body of knowledge courses are waived when a student has undergraduate equivalents. The second phase of the program allows the students to build on their accounting foundation and develop a high level of theoretical knowledge and a sound understanding of accounting principles and techniques. During the second part of the program, the student selects an area of specialization. Two areas are available: 1) financial reporting and auditing, or 2) taxation.

*Admission requirements:* An undergraduate grade point average of approximately B or above and a score at the 50th percentile or above on the GMAT examination are expected. The GMAT score and the under-

graduate grade point average are not the sole criteria for admission. However, those with undergraduate grade point averages of less than B or with lower than 50th percentile scores on the GMAT have a reduced probability of admission. The GRE may be used in lieu of the GMAT at the discretion of the director of graduate studies. Applicants for whom English is not the native language will be expected to demonstrate proficiency in written and oral communications (TOEFL score of 91 or above), or they may be required to correct deficiencies by taking selected courses for no program credit. The University minimum must be met on each of the four sections of the TOEFL; see page 115.

*Program requirements:* From 30 to 63 credits, depending on undergraduate program. A course requiring a major paper involving independent study is required in the nonthesis option. All graduate-level courses offered by the College of Business Administration are open to matriculated graduate students only.

## Applied Mathematical Sciences

(Interdepartmental)

Ph.D.  
401-874-2701

This interdepartmental program is sponsored by the departments of Computer Science and Statistics, Industrial and Manufacturing Engineering, Management Information Systems, and Mathematics. It is administered by a coordinating committee selected from the graduate faculty.

*Coordinating Committee:* Professor Merino, chairperson; Professors Freeman, Gonzalez, Kahn, Lamagna, Narasimhan, and Sodhi.

*Faculty:* Professors Eaton, Fay-Wolfe, Finizio, Grove, Hanumara, Jarrett, Kaskosz, Kowalski, Kulenovic, Ladas, Lamagna, Lewis, Merino, Montgomery, Narasimhan, Pakula, Peckham, Sodhi, and Tufts; Associate Professors Baglama, Baudet, DiPippo, Gonzalez, Kook, and Thoma; Assistant Professors Hervé and Wu; Adjunct Professor Ting; Adjunct Associate Professor Liu;

Professors Emeriti Carney, Driver, Roxin, Suryanarayan, and Verma.

### Specializations

Applied mathematics, computer science, operations research, and statistics.

### Doctor of Philosophy

*Admission requirements:* GRE with advanced test in undergraduate field; bachelor's degree in computer science, engineering, mathematics, management science, physical sciences, statistics, or equivalent. With permission, GMAT may be substituted for GRE by applicants with business background. Applicants with entrance deficiencies may be accepted subject to taking certain undergraduate courses in addition to the graduate program requirements. Although a person with a bachelor's degree may be admitted, this program is designed principally for people who have a master's degree.

*Program requirements:* dissertation; 54 credits beyond the bachelor's degree including MTH 435, 436; two courses selected from MTH 462, 513, 515, 535, 545, 547, 548, 561, 641, CSC 542 and 544 (one of these courses must be either MTH 513 or 515); and three core courses in each of two of the following areas: applied mathematics, basic analysis, computational mathematics, computer science fundamentals and theory, applied computer science, operations research, and statistics. (A maximum of 30 credits may be granted for a master's degree in a closely related area. In this case, 400-level courses cannot be counted for program credit.) Comprehensive examination in core areas and reading proficiency in one foreign language. The oral comprehensive examination should include a faculty member from the Mathematics Department. The Ph.D. qualifying examination is required of students admitted without the master's degree. All Ph.D. candidates must register full-time for two consecutive semesters prior to the Ph.D. comprehensive examination.

*Also see Mathematics, in this section.*

## Audiology

As of fall 2007, admission to the doctoral program in audiology has been suspended. For related programs, see Speech-Language Pathology.

## Biochemistry

See Cell and Molecular Biology.

## Biological Sciences

M.S., Ph.D. (Biological Sciences)  
401-874-2372

*Faculty:* Professor Goldsmith, chairperson. Professors Bibb, Bullock, Heppner, Kass-Simon, Killingbeck, Koske, A. Roberts, and Webb; Associate Professors Katz, Norris, and Wilga; Assistant Professors Irvine, Preisser, Seibel, and Thornber; Adjunct Professors Carleton, Deacutis, Fogarty, Lauder, Sanford, and S. Smith; Adjunct Associate Professors Cromarty, Gemma, and Thursby; Adjunct Assistant Professors Filardo and E. Roberts; Professors Emeriti Albert, Beckman, Caroselli, Cobb, Costantino, Goertemiller, Goos, Hammen, Harlin, Hauke, Hyland, Lepper, and Twombly; Associate Professor Emeritus Kruegar; Research Professor Hill.

### Specializations

*Behavior, ecology, and systematics:* population and community ecology, biomechanics of aquatic plants and animals, functional morphology of marine vertebrates and invertebrates, systematics of marine invertebrates, ecology and physiology of plant nutrient resorption, role of mycorrhizal fungi in structuring plant communities and plant growth, invertebrate behavior and neuroethology, avian behavior.

*Molecular, cell and developmental biology:* developmental gene regulation in animals, role of endogenous and environmental signals in the regulation of plant cell expansion and differentiation, construction of molecular linkage maps, genetic analysis of

quantitative traits, plant-microbe interactions, signal transduction in plants.

**Physiology:** comparative physiology; behavioral physiology; neurobiology of marine invertebrates; physiology of nutrient resorption in plants; plant stress physiology; physiology of mycorrhizal fungi; and environmental physiology.

### Master of Science

**Admission requirements:** GRE (general, i.e., verbal and quantitative sections) and bachelor's degree with major in the sciences. Candidates lacking undergraduate courses in organic chemistry, physics, mathematics through introductory calculus, and fundamental courses in biological sciences may be required to make up deficiencies without graduate credit. Applicants are normally admitted for the fall semester but may be considered for spring admission. For consideration for admission with financial aid, the completed application package including supporting material is due by January 15 for fall admission and September 15 for spring. The completed package for applicants not requesting financial aid is due by April 15 for fall admission and November 15 for spring.

**Program requirements:** The thesis option requires a minimum of 30 credits, six to nine of which may be earned through thesis research (BIO 599). BIO 581, 582 must be taken each year; thesis defense also required.

A nonthesis option for teachers is designed for students who are currently employed or have experience as middle or secondary school teachers. A minimum of 30 credits of course work and a substantial research project (including a written paper) are required. Twenty-one credits are chosen from upper-level courses in biology and related fields. Nine research credits are chosen from Biology 491, 492, 591 or 592. Biology 581 and 582 must be taken each year.

### Doctor of Philosophy (Biological Sciences)

**Admission requirements:** same as for master's degree; master's degree not required. Applicants are expected, but not

required, to have a reading knowledge of two languages in addition to their native language. Applicants are normally admitted for the fall but may be considered for spring admission. For consideration for admission with financial aid, the completed application package including supporting material is due by January 15 for fall admission and September 15 for spring. The completed package for applicants not requesting financial aid is due by April 15 for fall admission and November 15 for spring.

**Program requirements:** comprehensive examination and dissertation defense; qualifying examination required for all candidates except those having an M.S. degree; a minimum of 72 credits, 18-28 of which can be earned through dissertation research (BIO 699). Thirty transfer credits will be accepted for students who have received a M.S. degree. Registration in BIO 581, 582 required each year.

## Business Administration

M.B.A., Ph.D.  
401-874-5000

**Faculty:** Professor Chen, associate dean  
Professor Rosen, associate dean

**Accounting:** Professors Higgins, Martin, Matoney, and Schwarzbach; Associate Professors Beckman, Boyle, Graham, and Hazera; Assistant Professor Jelinek.

**Business Law:** Professors Hickox and Laviano; Associate Professor Dunn.

**Finance and Insurance:** Associate Professors Dash, Lee, and Oppenheimer; Assistant Professors DaDalt, Lin, Michayluk, and Yu.

**Management:** Professors Beauvais, Comerford, Cooper, Overton, Scholl, and Sink; Associate Professors Creed, and Dugal; Assistant Professors Dorado-Banacloche and Hamilton.

**Management Information Systems:** Professors Budnick, Chen, Jarrett, Mangiameli, Mojena, Narasimhan, and Westin; Associate Professor Lloyd; Assistant Professors Hales and Shin.

**Marketing:** Professors Della Bitta, N. Dholakia, R. Dholakia, Johnson, Mazze, Rosen, and Venkatesan; Associate Professors Sheinin, Suprenant, and Varki; Assistant Professor Leonard.

### Specializations

*For the M.B.A.:* finance, general business, management, marketing, and supply chain management.

*For the Ph.D.:* finance and insurance, management, management science, and marketing.

### General Information

In addition to the University's Office of Information Services, business students have access to three other computer facilities: the Bruce S. Sherman trading room, the college's general computer facility, and a computer laboratory at the Alan Shawn Feinstein College of Continuing Education (in Providence).

### Master of Business Administration

The Master of Business Administration (M.B.A.) program prepares students for leadership positions in business, government, and nonprofit organizations. The faculty seeks to develop a global perspective while stressing the ethical and environmental responsibilities inherent in all management activities. The program is offered on the Kingston Campus for full-time students, and in the evening through the Alan Shawn Feinstein College of Continuing Education (located in Providence) for part-time students. Full-time candidates may begin the program in the fall semester only and will complete the program in one calendar year. Part-time candidates may begin the program in the fall or spring semester.

**Admission requirements:** Graduate Management Admissions Test (GMAT), a statement of purpose, application fee, a résumé, two letters of recommendation, and transcripts of all previous undergraduate or postbaccalaureate work are required. Work experience is valued. Applicants for whom English is not the native language are required to score 91 or above on the

TOEFL and to meet the University minimum on each of the four sections of the exam; see page 115. The GMAT score and undergraduate grade point average are not the sole criteria for admission. However, those with undergraduate grade point averages of less than B or those with less than 50th percentile scores on the GMAT have a low probability of admission. Applications from well-qualified individuals who can contribute to the cultural and ethnic diversity of the College of Business Administration and the University are welcome. Part-time M.B.A. applications are due June 1 for September admission, and October 1 for January admission. Full-time M.B.A. applications are due April 15 for September admission.

*Program requirements:* The M.B.A. program curriculum has been updated to maintain a program that is current and relevant in the workplace.

The part-time M.B.A. program requires a minimum of 36 credits and a maximum of 45 credits. First, students are required to take the following seven courses: ECN 590, MBA 500, 502, 503, 504, 505, 565. Waiver exams are available for MBA 500, 504, and 505. MBA 500, MBA 503, and ECN 590 can be waived with permission of the program director based on successful completion of recent equivalent college-level courses at an AACSB-accredited institution. Students then must select five out of the following seven courses: MBA 510, 520, 530, 540, 550, 555, and 560. Finally, students are required to take three electives to complete their program of study.

The one-year full-time M.B.A. program is a nonthesis program consisting of a 45-credit integrated curriculum. Students take day classes during the fall and spring semesters. During the summer, they complete their program by taking two evening courses and participating in an internship or elective course work. Completed application packages must be received by April 15 for U.S. residents and February 15 for international applicants; applications received after that date are reviewed on a space-available basis.

## Doctor of Philosophy

The Ph.D. program in Business Administration is a research-based program. In addition to advanced course work, students work closely with faculty to conduct research on business issues of national and global importance. The program prepares students for faculty positions at research colleges and universities. The Ph.D. program is highly selective—only a small number of students are accepted each year. To be admitted you must demonstrate both academic merit and research capabilities.

*Admission requirements:* GMAT, a master's degree, original online application, a statement of purpose, a résumé, three letters of recommendation, and transcripts of all previous degrees are required. Applicants with diverse academic backgrounds and previous industry experience are encouraged to apply.

Applicants are admitted for the fall semester only. Due to the selectivity of the programs, new admissions to the doctoral program must be limited to a small number each year. Since applicants are evaluated by the doctoral faculty in each of the four specialization areas independently, all applicants must specify a single area of specialization on the application form. Completed application packages must be received by February 1.

Applicants for whom English is not the native language will be expected to score 233 (91 internet) or above on the TOEFL and to meet the University minimum on each of the four sections of the exam; see page 115. The GMAT scores and master's grade point average are not the sole criteria for admission. However, those with master's grade point averages of less than 3.20 on a 4.00 point scale or those who score lower than 600 on the GMAT have a low probability of admission. The average master's grade point average for current doctoral candidates is 3.60, and their GMAT scores average is 640.

*Program requirements:* Students must have a broad understanding of the major disciplines that comprise the study of business administration and their application to organizational settings. If you do not have this prerequisite knowledge, you may be required to complete up to 12 credits of prerequisite course work in the following areas: behavioral science applications to business administration (management or marketing), financial economics (economics or finance), statistics, and accounting. These prerequisite courses are not included for program credit. Students with previous course work in these areas are normally exempted. There are other avenues for an exemption. Students should discuss these alternatives with the doctoral program director.

The advanced study phase entails a minimum of 32 credit hours of advanced course work beyond the master's degree. It consists of 12 credits of doctoral research seminars in your area of specialization, six credits of research methods, and 12 credits of supporting electives. There are also two one-credit courses on teaching and research. As part of this phase, you will write two major papers of publishable quality. These papers are under the guidance of your professors. This phase culminates in written and oral comprehensive examinations covering your area of specialization, research methods, and other areas deemed appropriate by your doctoral dissertation committee.

After passing the comprehensive examination, doctoral candidates enter the dissertation research phase and engage in significant research under the supervision of their major professor and the doctoral committee. Doctoral dissertation research is expected to make a major contribution to the state of knowledge in the candidate's field. The dissertation defense is a final oral examination administered according to procedures established by the Graduate School.

The Management Information Systems area is also a sponsor of the Ph.D. program in applied mathematical sciences.

## Cell and Molecular Biology

M.S., Ph.D. (Biological Sciences)  
401-874-2201

*Faculty:* Professor Sperry, chairperson and director of graduate studies. Professors Bradley, Chandlee, Cohen, Goldsmith, Hufnagel, Kausch, Laux, and Nelson; Associate Professors Martin, Mottinger, Norris, and Sun; Assistant Professors N. Howlett and B. Jenkins; Adjunct Assistant Professor Mehta; Professors Emeriti Cabelli, Hartman, Traxler, Tremblay, and Wood; Associate Professor Emeritus Krul.

### Specializations

*Cell biology:* bioanalytical chemistry, DNA-protein interactions, immunocytochemistry, electron microscopy, molecular biology and RNAi technology applied to signal transduction in mating protests, identification and localization of neurotransmitters and their receptors in Hydra, the role of actin in phagocytosis and cell contractility.

*Medical microbiology:* pathogenesis, immunology, virology, drug design and molecular mechanisms of antibiotic resistance.

*Microbial ecology:* marine and freshwater ecology, biodeterioration.

*Microbial genetics, physiology, molecular microbiology:* genetic and molecular relation of cellular morphogenesis and development, bacterial colonization of the mammalian intestine, messenger RNA metabolism in prokaryotes and eukaryotes, control of transport and metabolism, mechanism of survival, membrane structure.

### Master of Science

*Admission requirements:* GRE and a bachelor's degree with a program of studies that included at least two semesters each of biological sciences, general chemistry, organic chemistry, physics, and mathematics including at least one semester of calculus. Applicants may be admitted with deficiencies, to be corrected with appropriate course work (to be excluded from program credit).

*Program requirements:* core courses (all tracks)—MIC 413/415 (5), BCH 593E, 581, 582, BCH/MIC 695. Biochemistry track—core courses plus nine credits chosen from BMS 641, BCH (BMS) 642, BMS 530, 535, 572, BCH 521, 523/524 (max three credits for M.S. and six credits for Ph.D.). Microbiology track—core courses plus MIC 414/416 (5), 500–600- level elective, 695. Molecular genetics track—core courses plus BCH 437, MIC 695, at least two credits of a free elective, MIC 552 or BIO 573.

### Doctor of Philosophy (Biological Sciences)

*Admission requirements:* same as for master's degree. A course in physical chemistry is also recommended.

*Program requirements:* same as for master's degree, plus all candidates must pass the Ph.D. qualifying exam. Of the credits earned beyond the master's degree, 18 should be in course work. Prior to the last semester, the candidate must pass a written and oral Ph.D., comprehensive examination in the major areas of his or her program.

## Chemical Engineering

M.S., Ph.D.  
401-874-2655

*Faculty:* Professor Bose, chairperson; Professor Brown, director of graduate studies. Professors Barnett, Brown, Gregory, and Lucia; Associate Professors Gray, Greenfield, and Rivero-Hudec; Assistant Professor Bothun; Associate Research Professor Crisman; Professors Emeriti Rockett and Rose.

### Specializations

*Biochemical engineering:* reactors, purification methods, degradation, and chemical production.

*Bionanotechnology:* hybrid bio/nano materials, drug delivery, biomolecular processes, sensors and devices.

*Energy engineering:* analysis of energy systems, multiphase flow and water conservation.

*Environmental engineering:* separation methods, heavy metal removal, solvent recovery, hazardous waste minimization, and desalination.

*Materials engineering:* corrosion and erosion, electronic materials processing, ceramic processing, polymer films, conducting polymers and thin film materials and sensors.

*Polymer process engineering:* thermo-physical properties of polymers, polymer process modeling and control, and molecular modeling.

*Process simulation:* process design, optimization, and analysis; process control; numerical methods.

*Surface, interfacial and colloidal phenomena:* soft and hard colloids, nano composites, and imaging techniques.

*Unit operations:* mixing, vacuum processes, chromatography, electrodialysis, ultrafiltration and microfiltration.

### Master of Science

*Admission requirements:* bachelor's degree in chemical engineering; candidates from other engineering fields or from mathematics, biology, chemistry, or physics may be accepted into the program with possible addition of prerequisite courses.

*Program requirements:* 30 credits including CHE 501, 502, 513, 541, 599 (6–12 credits). For 12 thesis credits, no special problems or graduate seminar credit is permitted, 18–24 credits of course work. Nonthesis option for part-time students, with permission of the chairperson; master's examination and comprehensive report with oral examination. Attendance in CHE 501 or 502 is required every semester for all on-campus students.

### Doctor of Philosophy

*Admission requirements:* B.S. or M.S. degree in engineering.

*Program requirements:* Candidate's program will be determined in consultation with his or her committee and will be based on his or her background and career goals, but must include CHE 501, 502, 614, 641,

699 (24 credits). Twelve credits of course work in addition to the required courses would be needed. A comprehensive examination and an acceptable dissertation are required to complete the program, along with CHE 501, 502.

### Polymer Certificate Program

The post-baccalaureate certificate program in polymers is targeted toward students who possess a bachelor's degree in an engineering or science field and are seeking further education in polymers. The program provides opportunities for students to improve their knowledge of polymers in areas outside of their specific field of expertise, to apply their technical knowledge to problems in polymer engineering and science, and to develop technical skills that can be applied in industrial polymer engineering positions.

*Admission requirements:* same as for M.S.

*Program requirements:* successful completion of four courses: CHE 513, 530, 531, and 537.

## Chemistry

M.S., Ph.D.  
401-874-2318

*Faculty:* Professor Euler, *chairperson*. Professors C. Brown, Dain, Fasching, Freeman, Kirschenbaum, Lucht, Oxley, Rosen, Shimizu, Smith, Vittimberga, and Yang; Assistant Professors DeBoef and Major; Professors Emeriti P. Brown, Cheer, Cruickshank, Fisher, Goodman, Nelson, Rosie, and Traficante.

### Specializations

*Analytical chemistry:* vibrational spectroscopy, separations science, laser spectroscopy, bioanalyses, surface science, explosives.

*Biological chemistry:* enzyme inhibition, neurochemistry, oxidative stress, macromolecular recognition.

*Inorganic chemistry:* metals in high oxidation states, solution kinetics, coordination complexes, electron transport, polymers.

*Organic chemistry:* reaction mechanisms, synthesis, electron transfer, heterocycles, polymers, organometallics.

*Physical chemistry:* theoretical chemistry, molecular spectroscopy, polymer arrays, statistical mechanics, smart materials.

### Master of Science

*Admission requirements:* Preference is given to candidates with undergraduate majors in chemistry or chemical engineering including mathematics through calculus. GRE only for graduates of non-U.S. universities, with advanced test strongly recommended.

*Program requirements:* placement examination to determine specific program requirements and successful completion of master's qualifying examinations. For thesis option (31 credits), 12 credits of graduate core courses in at least three of the four areas of chemistry; one additional graduate-level course in chemistry; CHM 642 or 643; and thesis. For nonthesis option (30 credits), 18 credits of graduate core courses; six additional credits of graduate course work; CHM 642 (1 credit); CHM 551, 552 (minimum 5 credits); and a written comprehensive examination.

The 30-credit nonthesis option is also offered on-site at Pfizer, Inc. (Groton, Conn.)—18 credits of graduate core courses; six additional credits of graduate course work; CHM 642 (1 credit, taken in Kingston), CHM 551 (minimum 5 credits); and a written take-home comprehensive exam.

### Doctor of Philosophy

*Admission requirements:* same as for master's degree.

*Program requirements:* successful completion of qualifying examination; 15 credits of graduate core courses; one additional graduate-level course in chemistry; and CHM 642–644 (3 credits). Comprehensive examination and dissertation.

## Civil and Environmental Engineering

M.S., Ph.D.  
401-874-2692

*Faculty:* Professor Lee, *chairperson*; Professor Tsiatas, *director of graduate studies*. Professors Veyera and Wright; Associate Professors Karamanlidis and Thiem; Assistant Professors Baxter, Cindy, Hunter, and Thomas; Adjunct Professors Baird, Harr, and O'Neill; Adjunct Associate Professor Apostol; Adjunct Assistant Professors Badorek and George; Professors Emeriti Kovacs, Marcus, McEwen, Moulthrop, Poon, and Urish.

### Specializations

*Environmental engineering:* water supply and treatment facilities, municipal and industrial waste treatment, flocculation and coagulation of wastes, solid waste and hazardous waste management, modeling of environmental systems, groundwater pollution, groundwater exploration, coastal groundwater, nonpoint source pollution, stormwater management, river and estuary hydrology, hydraulics and water quality.

*Geotechnical engineering:* geoaoustic modeling and properties of marine sediments, sediment sampling, in-situ testing, deep-sea sedimentary processes, sediment transport, creep processes, environmental geotechnology, dredge material disposal, experimental geomechanics, soil-structure interaction, constitutive modeling of geological materials, particulate mechanics, applications of nonlinear finite element and discrete element methods to geomechanics problems, earthquake engineering, wave propagation in granular media, dynamic soil properties, liquefaction, geosynthetics.

*Structural engineering:* matrix and finite element analysis, computer and numerical methods, deterministic and stochastic structural dynamics, earthquakes, vibration control of buildings, system identification, structural reliability, hysteretic structures, fatigue, design of steel and concrete struc-

tures, marine structures, structural stability, thin-walled structures, coastal structures, vibration control, soil-structure interaction, condition assessment and rehabilitation of bridges.

*Transportation engineering:* properties of pavement materials, pavement theory and design, pavement management system, highway location, and geometric design. For master's level only: traffic operation and control, transportation cost, transportation supply and demand analysis, and transportation system analysis.

### Master of Science

*Admission requirements:* bachelor's degree in civil or environmental engineering. Candidates in other engineering fields or in mathematics, biology, chemistry, or physics may be accepted with the possibility of additional undergraduate prerequisite courses being required.

*Program requirements:* thesis or nonthesis option. Thirty credits plus CVE 601, 602 except for part-time students. For the thesis option, the thesis counts as six to nine of the required credits. The nonthesis option requires a comprehensive technical report and a written comprehensive exam.

### Doctor of Philosophy

*Admission requirements:* master's degree in civil or environmental engineering or a related field.

*Program requirements:* a minimum of 42 credits plus CVE 601 and 602 except for part-time students beyond the M.S. degree. Students take between 18 and 24 dissertation credits, including the two-course minor outside of the candidate's area of specialization, where required by the candidate's committee; a comprehensive examination; and a dissertation. Although there is no formal departmental language requirement, the committee may require proficiency with a research tool or in a foreign language.

## Clinical Laboratory Science

M.S.

401-874-2315

*Faculty:* Professor Sperry, *chairperson*; Clinical Professor Paquette, *director of graduate studies*. Professors Boulmetis, Goldsmith, and Laux; Associate Professors Norris and Rivero-Hudec; Clinical Assistant Professor Klitz; Adjunct Professors Mello, Pisharodi, Sheff, and Vezza; Adjunct Associate Professors Balkovic, Barker, Canick, Opal, and Tantravahi; Adjunct Assistant Professors Aucoin, Blazek-D'Arezzo, Cadenazzi, Heelan, Kenney, LaFazia, Mayer, Meglio, and Metheny; Professors Emeriti Campbell and Traxler.

### Specializations

Major specializations in biotechnology, clinical chemistry, cytopathology, clinical microbiology, hematology, immuno-hematology; minor specializations in adult education and management.

### Master of Science

*Admission requirements:* GRE recommended; bachelor's degree in clinical laboratory sciences, life sciences, physical sciences, or health sciences (for cytopathology, must include 20 semester hours of biological science [anatomy and physiology are recommended] and eight semester hours of chemistry); certification, or certification eligibility, by a nationally recognized certifying agency, or a minimum of one year's postbaccalaureate laboratory experience. One course in statistics is required. Applicants with deficiencies in background courses may be required to complete appropriate course work without graduate credit. Acceptance into the cytopathology specialization is contingent upon acceptance into the Rhode Island School of Cytotechnology, sponsored by Our Lady of Fatima and Women and Infants hospitals.

*Program requirements:* BCH 551, EDC 505, 582, 583 or 584 (or MIC 534 or MTC 591 for cytopathology), MIC 534 for

biotechnology), MTC 510, 512, 513, and nine to 24 credits in the area of specialization (BIO 437, MIC 422, and MTC/APS 571 for biotechnology; MIC 534, BIO 437, and MTC 502 for clinical chemistry; MIC 534 and MTC 501 and 542 for clinical microbiology; MIC 534, MTC 520, and 530 for hematology and immunohematology; MTC 561 through 566 for cytopathology). The remainder of courses are to be selected from education, management, or other specializations for a total of 33 credits (39 credits for cytopathology). Comprehensive written examination. Major research paper.

The following are recommended for a minor specialization in management: PHP 680 and two other graduate MBA courses selected in consultation with your major professor. The following are recommended for a minor specialization in adult education: four courses selected from EDC 505, 529, 582, 583, and 584.

## Communication Studies

M.A.

401-874-2552

*Faculty:* Associate Professor Derbyshire, *chairperson*; Associate Professor McClure, *director of graduate studies*. Professors Brownell, Chen, Grubman-Black, Ketrow, Mundorf, Salazar, Silvia, Swift, and Wood; Associate Professors Leatham and Quainoo; Assistant Professors Diciccio, Johnson, Torrens, and Ye; Professors Emerita Anderson, Devlin, and Doody.

### Specializations

Specializations offered in interpersonal communication, media studies, organizational communication, and public discourse. In consultation with advisors, students prepare for careers in public and private industry, government, or academic areas. Students are encouraged to develop their course plans to foster their evolving academic and career needs. Thus, one might advance specific interests and competencies in areas such as college teaching, communication technology, conflict man-

agement, political media, organizational communication training and development, or public relations. Individual specialties can be developed within each of the specialization areas.

For students' convenience, most courses are offered in late afternoon or evening in Providence and Kingston. Full- and part-time programs of study are available.

### Master of Arts

**Admission requirements:** Generally, GRE General Test (current GRE test format with analytical writing, verbal, and quantitative sections is requested), not older than five years, and bachelor's degree with undergraduate credit in communication studies. Applicants should submit a paper with a research focus written for an undergraduate course. Students from other academic backgrounds may be admitted with the permission of the director of graduate studies, although some basic courses may have to be taken for no program credit. Nonnative speakers of English are expected to demonstrate proficiency in written and oral English communication (TOEFL score of 230 CBT or 88 iBT for admission; minimum of 250 CBT or 100 iBT, including 23 speaking score, for consideration for teaching assistantships. In all cases, the University minimum must be met on each of the four sections of the TOEFL exam; see page 115). Applications should be completed online ([uri.edu/gsadmis](http://uri.edu/gsadmis)); completed application packets with support materials should be sent directly to Director of Graduate Studies, Department of Communication Studies, 60 Upper College Road, Suite 1, URI, Kingston, RI 02881-0812. Completed applications, including support materials, must be received by February 1 for applicants who wish to be considered for financial aid. Applications received after that deadline but before July 15 will be reviewed on a space-available basis until the program is filled.

**Program requirements:** an approved program will include a minimum of 30 credits for both the thesis and nonthesis options. COM 501 and 502 are required for all students, and must to be completed

prior to seminar or other course work. All students must complete one seminar in each of the four focus areas (12 credits): COM 510—interpersonal communication; COM 520—media studies; COM 530—organizational communication; and COM 540—public discourse. An additional course in research methods, statistics (e.g. STA 409 or PSY/STA 532), or data analysis is strongly recommended.

For the thesis option, the requirements are 24 course credits plus thesis (6 credits) and its oral defense. For the nonthesis option (admission with approval of the director of graduate studies), requirements are 30 credits of course work that includes a course requiring a substantial paper based on significant independent study, plus a comprehensive examination. The comprehensive consists of two sections: the written section, which examines the student's proficiency and knowledge in each of the four focus areas; and the oral section, which allows for the student to strengthen written answers, and to address material related to the written questions.

For thesis students, six elective credits beyond their 18 specified credits may be taken. For nonthesis students, up to 12 credits of free electives may be taken. A limited number of 500- and 600-level courses in other departments and programs may be used for program credit if approved by the graduate program director as part of the student's program of study before the courses are taken.

Students who take six credits per semester, plus one summer, may complete their studies in two years.

### Financial Aid

All requests for assistantships must be sent to the director of graduate studies with the application packet. A limited number of teaching assistantships and an occasional research assistantship are available. In addition, some graduate assistantships outside the department may be available, such as in student life or residential housing. Priority will be given to applications received by February 1; therefore, assistantships will be awarded on a space-available basis.

## Community Planning

M.C.P., M.C.P./J.D. (with RWU)  
401-874-2982

*Faculty:* Professor Atash, *chairperson*. Associate Professors Feldman and Gordon; Professor Emeritus Feld;

Admissions to the Community Planning Program have been suspended effective June 30, 2005.

## Computer Science

M.S., Ph.D.  
401-874-2701

*Faculty:* Professor Kowalski, *chairperson*; Professor Fay-Wolfe, *director of graduate studies*. Professors Lamagna and Peckham; Associate Professors Baudet and DiPippo; Assistant Professors Hamel and Hervé; Adjunct Assistant Professors Dickerman, Encarnação, Henry, Ravenscroft, and Stephenson; Professors Emeriti Carney and Carrano.

### Specializations

Analysis of algorithms, artificial intelligence, computer architecture, parallel computing, theory of computation, databases, data mining, operating systems, distributed computing, real time systems, computer graphics, software engineering, computer algebra, VLSI systems, numerical analysis, statistical computation, simulation, computer-aided education.

## Master of Science

**Admission requirements:** bachelor's degree in computer science or a closely related field. Applicants with a bachelor's degree in an unrelated field will be considered provided they have completed course work covering the material in CSC 211, 212, 301, 305, 340 and MTH 141, 142, 215, 243. Students may be admitted who have completed only a part of the above course work but they will be required to complete the deficiencies before taking more advanced classes.

The GRE General test is required. A subject test in computer science or a related field is not required but may be considered by the admission committee.

**Program requirements:** The M.S. curriculum in computer science has three tracks: thesis, nonthesis, and applied nonthesis. For the purpose of describing degree requirements, computer science courses are organized into the following groups:

Algorithms: CSC 440, 541, 542, 550

Programming Languages: CSC 402, 501, 502

Computer Architecture: CSC 411, 415, 511, 517

Computer Systems: CSC 412, 512, 517, 519

Theory of Computation: CSC 445, 544

Software Design: CSC 505, 509

Applications: CSC 406, 436, 481, 485, 486, 522, 536, 581, 583, 585, 586

A program of study can include at most three courses at the 400-level. Students who have undergraduate credits for a particular 400-level course (or equivalent) cannot repeat the course for graduate credit.

**Program requirements for thesis option:** 1) at least one course from each of the following course groups: algorithm or theory of computation, programming languages or software design, computer architecture or computer systems; 2) at least five other courses chosen with the approval of the major professor (at least two of these must be CSC courses or approved equivalents); 3) at least two separate semesters of one credit of CSC 592, *Computer Science Seminar Series*; 4) eight credits of thesis.

**Program requirements for nonthesis option:** 1) at least one course from each of the following groups: algorithms, programming languages, computer architecture, computer systems, theory of computation, and software design; 2) at least two courses from the applications group; 3) at least two more courses chosen with the approval of the advisor; 4) at least one of the ten courses listed above should include writing a substantial paper based on significant independent research; 5) passing a written comprehensive examination.

Program requirements for applied nonthesis option: 1) at least one course from each of the following course groups: algorithms, programming languages, computer architecture, computer systems, and software design; 2) at least two courses from the applications group; 3) at least one course should include writing a substantial paper based on significant independent research; 4) an approved concentration in another discipline consisting of a minimum of four graduate courses in the area of concentration; 5) passing a written comprehensive examination; 6) minimum of 40 credits required.

Approved applied nonthesis option concentrations exist for Computers and Business Management, Computers and Operations Research, and Computers and Statistics. Other concentrations are possible. Students should meet with their faculty advisor to discuss requirements.

The department encourages other application areas in the physical, biological, mathematical, and social sciences. Students in the applied track will have an advisor in computer science and an advisor in their application area. Together, these advisors will approve the student's program of study.

### Doctor of Philosophy

**Admission requirements:** Bachelor's degree in computer science or a closely related field. Applicants with a bachelor's degree in an unrelated field will be considered provided they have completed course work covering the material in CSC 211, 212, 301, 305, 340 and MTH 141, 142, 215, 243. Students may be admitted who have completed only a part of the above course work but they will be required to complete the deficiencies before taking more advanced classes.

The GRE general test is required. A subject test in computer science or a related field is not required, but may be considered by the admission committee.

**Program requirements:** The student must complete 54 credits of course work beyond the bachelor's degree in addition to 18 credits for the doctoral dissertation. A program of study can include, at most, three

courses at the 400-level. Students who have undergraduate credits for a particular 400-level course (or equivalent) cannot repeat the course for graduate credit. A student entering the program with an M.S. degree in computer science or a related area may be granted up to 30 credits toward the Ph.D. in computer science.

Students must complete at least one course from each of the following course groups (the groups are those listed above in the master's degree section): algorithms, programming languages, computer architecture, computer systems, theory of computation, and software design; at least two courses from the applications group; and at least two separate semesters of one credit of CSC 592, *Computer Science Seminar Series*. Other courses must be selected in order to meet the 54-credit minimum and will be selected in consultation with the student's advisor or major professor.

Students must take a comprehensive examination, which is composed of a written examination and an oral examination. The written examination, which will be held at least once a year, covers the first six core course areas listed above. Success in the written examination is conditional upon obtaining passing grades in all core areas, and is a prerequisite for taking the oral examination. Typically, a student would be expected to take the comprehensive examination within two years after joining the program. The objective of the oral examination is for the student to present an intended research program and demonstrate satisfactory knowledge and understanding of the scientific literature of the corresponding research domain. A candidate whose comprehensive exam performance is deemed as failing by the Computer Science Graduate Committee may, with the recommendation of the committee and the approval of the Graduate School, be permitted one re-examination, to be taken no sooner than four months and no later than one year after the initial examination.

Students enrolled in the program must give at least one presentation in the regular department research seminar series prior to defending their Ph.D. dissertation.

## Dietetic Internship Certificate Program

See Nutrition and Food Sciences.

## Economics

See Environmental and Natural Resource Economics.

## Education

M.A. 401-874-2564

Ph.D. 401-874-4150

Professor Boulmetis, *coordinator of graduate studies*.

*Faculty for the M.A.:* Professors Boulmetis, Brand, Byrd, Eichinger, Favazza, Hammadou-Sullivan, Heifetz, McKinney, Purnell, Willis, and Young; Associate Professors Adamy, Guglielmi, Hicks, Seitsinger, and Shim; Assistant Professors Ciccomascolo, Coiro, Deeney, Fogelman, and Kern; Professors Emeriti Bumpus, Croasdale, Kellogg, Long, MacMillan, and Russo; Associate Professor Emeritus Nelson.

*URI Faculty for the Ph.D. in Education Program:* Professors Boulmetis, Brady, Brand, Byrd, Eichinger, Hammadou-Sullivan, Heifetz, McKinney, Purnell, Roush, George Willis, Grant Willis, and Young; Associate Professors Adamy, Branch, Hicks, Kovarsky, McCurdy, and Shim; Assistant Professors Ciccomascolo and Deeney.

*RIC Faculty for the Ph.D. in Education Program:* Professor Gleason, *RIC co-director*; Professors Barton, Carey, Castagno, Cordeiro, Dufour, Enos, Filinson, Fluehr-Lobban, Gleason, Kochanek, Panofsky, Roemer, and Rowell; Associate Professors Bigler, Brell, Medeiros-Landrand, and Ozcan; Assistant Professors Bogad and Niska.

## Master of Arts

*Admission requirements:* A faculty interview is required. Individuals seeking to undertake the initial certification options in elementary and secondary education are

expected to have a substantial academic background in the field of interest. In addition, applicants should contact the department regarding the required admissions portfolio, interview process, and yearly admission deadline (or visit the Web page for these deadlines at  ). For foreign applicants, a TOEFL score of 600 PBT, 250 CBT, or 100 iBT is required, and the University minimum must be met on each of the four sections of the exam; see page 115.

*Program requirements:* Individuals may choose the thesis or nonthesis option. Required are 30 credits for the elementary and secondary specialization; 33 credits for the adult education specialization; and a minimum of 34 credits for reading education; including a required core of at least six credits (a foundation and a research methodology course); two electives (six credits), and an academic specialization (18–24 credits). The nonthesis option requires a written comprehensive examination and at least one designated course with a substantial paper involving significant independent research.

*Teacher certification option (MATCP):* applicants who wish to pursue the initial teacher certification option of the elementary or secondary specializations take 19–34 additional credits. Students may obtain certification prior to completing the requirements for the M.A., as listed above. See Teacher Certification on page 157.

*Specializations:* Applicants seeking the Master of Arts degree must declare an area of specialization. A specialization may be one predefined by the department or designed in accordance with the applicant's background and interest. Defined specializations include:

Elementary education—advanced study for elementary teachers; the MATCP option is available for students seeking initial certification in elementary teaching.

Secondary education—advanced study for secondary teachers of English, history, languages, mathematics, science, and social studies; the MATCP option is available for students seeking initial certification in these areas.

Reading education—program leading to advanced certification as reading specialist/consultant. Applicants must hold initial teaching certification in early childhood, elementary, or secondary education. Application materials can be obtained from the URI Graduate Admissions Office, Quinn 204, Kingston, RI 02881; 401-874-5930. A résumé of experience must be submitted with an application.

Adult education—administration; adult literacy; education, training, and management (ETMS); gerontology; training and development; and vocational education.

## Doctor of Philosophy (Joint with Rhode Island College)

Rhode Island College and the University of Rhode Island offer a Ph.D. in education which prepares scholar practitioners for new professional roles as educational leaders, mentors, and scholars. The program is grounded in the knowledge bases of school teaching and learning. The program's four objectives provide a framework for the preparation of scholar practitioners to: 1) develop and employ collegial relationships through professional collaboration; 2) acquire and apply the skills and processes of scholarly inquiry; 3) demonstrate expertise in an area of specialization that advances the mission of American education; and 4) implement professional practices that promote progress in educational settings.

Designed for professionals involved in prekindergarten through adult education, the doctoral program admits 12 to 15 students per year. This cohort-based research program is for students who previously earned a master's degree in education or an allied field or have earned at least 30 graduate credits from a regionally accredited institution. The graduate-level work must include three credits in each of the following areas: a) educational foundations; b) curriculum; and c) research. A major segment of each student cohort will be made up of teachers and administrators from Rhode Island who are committed to developing advanced teaching, leadership, and research skills.

*Admission requirements:* Graduate Record Exam (GRE) scores no older than 5 years, official transcripts, curriculum vitae, and letters of recommendation are required. Finalists in the application process must participate in a personal interview. Applicants are admitted for the fall semester only. The completed application package must be received by January 27. The program is offered jointly by the two institutions with single admission and administrative processes. Prospective applicants should address inquiries concerning the program to one of the co-directors at either Rhode Island College or URI. All applicants must complete the electronic graduate application for admission, available online at [uri.ed/gsaadmis](http://uri.ed/gsaadmis).

*Program requirements:* the program requires a minimum of 56 credits beyond the master's degree or 86 graduate credits. Three year-long core seminars emphasize different aspects of education from history, culture, and foundations, to curriculum development, teaching, and learning, and finally to administration, leadership, and policy analysis (EDP 610, 611; 620, 621; 630, 631, for a total of 18 credits). Field research seminars (EDP 641, taken six times for a total of six credits) are taken in parallel with the core seminars. Field-based research (EDP 622, two credits, taken in the second year) explores community service and service learning in the context of schools. Students gain research expertise to help their development as school leaders through course work (EDP 615, 625, for a total of six credits) and the field research seminars. Scholarly expertise in a professional area is acquired through specialization courses (12 credits).

All students must complete a doctoral dissertation (12 credits). To progress through this program, students must 1) receive positive recommendations from core seminar professors; 2) pass a qualifying examination upon completion of the first core seminar (EDP 610, 611) and the course in research methodology (EDP 615) if they have not previously completed a master's degree in education or a closely related field; 3) pass a comprehensive examination

after completion of all core seminars and research courses; and 4) complete a successful dissertation and defense.

## Electrical Engineering

M.S., Ph.D.  
401-874-2506

*Faculty:* Professor Boudreaux-Bartels, chairperson; Professor Fischer, director of graduate studies; Professors Daly, L. Jackson, Kay, Kumaresan, Lo, Mardix, Ohley, Ying Sun, Sunak, Swaszek, Tufts, Vaccaro, and Q. Yang; Associate Professor Vetter; Assistant Professors Sendag and Yan Sun; Professor-in-residence Uht; Adjunct Professors Banerjee, Chiaramid, Cooley, Middleton, and Turtle; Adjunct Associate Professor Jennanne; Adjunct Assistant Professors Davis and Sepe; Professors Emeriti Haas, Lengyel, Lindgren, Mitra, Sadasiv, and Spence.

### Specializations

*Acoustics and underwater acoustics:* communication, detection, classification, and matched-field localization for underwater acoustic channels, speech processing.

*Biomedical engineering:* physiologic systems modeling and control; medical instrumentation employing digital computer techniques, pattern recognition, and image processing in medicine (texture analysis, image classification, and segmentation); biological effects of electric and magnetic fields at the cellular level.

*Computer engineering and VLSI:* micro-programming systems, multiprocessing, high-speed signal processing; processor realization using VLSI; MOS layout and microchip design; data structures and computer architectures, fault-tolerant computing.

*Communication theory:* statistical and computer communications; vector quantization; noise modeling and detection; data compression and coding; local area networks, reliable and secure communication.

*Digital signal processing:* detection and parameter estimation; prediction and filtering; spectrum analysis; array processing; digital filter synthesis; adaptive filtering, algorithm design.

*Electrical and optical properties of materials:* optical properties of nonmetallic solids, laser-matter interaction, photocathodes; crystallographic techniques for submicron X-ray lithography; radiation damage in nonmetallic solids; semiconductor physics.

*Electromagnetic fields and optical communication:* numerical and approximate methods for calculation of electromagnetic fields in inhomogeneous and anisotropic structures (related to biological effects of electromagnetic fields); evaluation of mode characteristics in optical and infrared fiber waveguides; fiber optic sensors; fiber optical amplifiers; electro-optic modulators; radiation effects.

*Systems theory:* control and estimation theory, intelligent systems; multivariable systems; nonlinear systems, modeling of deterministic and stochastic systems; model order reduction; optimal smoothing, filtering and prediction; pattern recognition, classification, computer vision; computerized imaging systems and image analysis.

### Master of Science

*Admission requirements:* GRE and B.S. degree in electrical, computer, or biomedical engineering, physics, mathematics, or computer science. Preparation in related fields such as mechanical engineering or in the life sciences may be acceptable.

*Program requirements:* thesis or non-thesis option—minimum of 30 credits in science and engineering with a minimum of 16 credits in graduate-level electrical engineering courses. One credit of the departmental seminar (ELE 601 and/or 602) is required of all students. Up to two credits of seminar may be used toward the 30-credit master's requirement. Individual programs are designed in accordance with students' backgrounds and interests, but require departmental and Graduate School approval. For the thesis option, the thesis counts as six to nine credits. For the non-thesis option, a written master's examination and one course involving significant independent research and a substantial paper are required.

## Doctor of Philosophy

*Admission requirements:* GRE and M.S. degree or equivalent in electrical, computer, or biomedical engineering, physics, mathematics, or computer science, or a related field. Exceptional candidates may be admitted directly from the B.S. degree.

*Program requirements:* a minimum of 72 credits beyond the B.S. degree. The M.S. degree may count up to 30 of these credits; the remaining credits are split between course work and dissertation research. Students with an M.S. in an appropriate field complete between 18–24 dissertation credits; students without the M.S. may take between 18 and 30 (in either case additional dissertation credits may be taken for no program credit). A qualifying examination is required. A comprehensive examination is required after all formal course work is completed. Two credits of the departmental seminar (ELE 601 and/or 602) are required of all students. These credits may not be counted as part of the 42 credits required beyond the master's degree.

## English

M.A., M.A./M.L.I.S., Ph.D.  
401-874-5931

*Faculty:* Associate Professor David, chairperson; Professor Campbell, director of graduate studies. Professors Arakelian, Cappello, Donnelly, Dvorak, Gititi, Leo, Okeke-Ezigbo, Reynolds, Schwegler, Shamoone, Stein, and Walton; Associate Professors Barber, Karko, Mandel, Martin, Miles, and Vaughn; Assistant Professors Betensky, Covino, Dunson, Frankel, Jones, Rojas, Trimm, and Williams; Professors Emeriti Burke, Cuddy, Neuse, and Pearlman; Associate Professors Emeriti Cane and Reaves.

### Specializations

American and British literature and culture; critical and cultural theories; rhetoric and composition studies.

## Master of Arts

*Admission requirements:* a B.A. in English or the equivalent, with a grade point average of B (3.00 on a 4.00 scale) or better in all English courses. Completed application packages are to be sent directly to the Director of Graduate Studies, English Department, Independence Hall, University of Rhode Island, and must be received by February 1. Applicants will be accepted for September admission only. GREs (both general and subject) are requested but not required. A writing sample of 20 pages maximum is required. Nonnative speakers of English must have a minimum score of 91 on the TOEFL iBT in order to be considered for admission, and the University minimum must be met on each of the four sections of the exam; see page 115.

*Program requirements:* there are two options for fulfilling requirements—24 credits plus thesis (six credits); or 30 credits (including ENG 595) plus a portfolio and a related oral examination. ENG 510, 511, and 514 are required. The specialization in rhetoric and composition studies requires ENG/WRT 512 and 524.

### M.A. in English and M.L.I.S. Cooperative Program

By proper selection of course work, a student may simultaneously earn the degree of Master of Arts in English and Master of Library and Information Studies.

*Admission requirements:* GRE and other requirements listed for English and library science. Applicant must apply and be accepted in both programs. The application for each program must indicate English/library and information studies as the field of specialization.

*Program requirements:* Students must submit individual programs of study for the 42-credit M.L.I.S. program and the 30-credit M.A. in English. The integrated pursuit of the two degrees makes it possible for six credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of course work to be applied in the opposite direction. ENG 510, 511, and 514 are

required. Thus, when planned and taken jointly, the two programs can be completed with a total of 60 credits rather than 72. Students must complete at least 36 credits in librarianship and at least 24 credits in English.

## Doctor of Philosophy

The Ph.D. program stresses faculty/student mentoring. Admission is competitive and based mainly on academic merit, demonstrated capability to do research, and the match of research interests between the applicant and faculty in indicated or developing areas of specialization.

*Admission requirements:* M.A. in English or equivalent. Although grades are not the only criterion, applicants having less than a 3.50 grade point average (on a 4.00 scale) have a low probability for admission. Completed application packages should be sent to the Director of Graduate Studies, English Department, Independence Hall, University of Rhode Island, and must be received by February 1. Applicants will be accepted for September admission only. GREs (both general and subject) are requested but not required; a writing sample of 20 pages maximum is required. Nonnative speakers of English must have a minimum score of 91 on the TOEFL in order to be considered for admission, and the University minimum must be met on each of the four sections of the exam; see page 115.

*Program requirements:* 72 credits—30 credits approved for M.A. work; 24 credits of course work plus 18 credits of dissertation research. ENG 510, 511, and 514 are required. Two written comprehensive examinations, one publishable article, and an oral examination. A dissertation and an oral defense. For specialization in rhetoric and composition studies, ENG/WRT 512, 645, and 647 are required. A limited number of 500- and 600-level courses in other departments and programs may be used for program credit if approved as part of the student's program of study before the courses are taken. (In some cases, a research tool may be required by a student's doctoral committee in consultation with the director of graduate studies.)

## Financial Aid

All requests for assistantships must be sent to the director of graduate studies with the application packet. In addition to teaching assistantships, there is an editorial graduate assistantship for the journal *ATQ: A Journal of 19th Century American Literature and Culture*.

## Environmental and Natural Resource Economics

M.S., Ph.D.  
401-874-2471

*Faculty:* Professor J.L. Anderson, *chairperson*; Associate Professor C. Anderson, *director of graduate studies*. Professors Gates, Grigalunas, Opaluch, Roheim, Sutinen, Swallow, and Tyrrell; Assistant Professor Schnier; Adjunct Professors Holland, Shogren, and Ward.

### Specializations

Environmental economics, renewable and nonrenewable natural resource economics, fisheries management, international fisheries development, international trade, fisheries marketing, coastal zone land use and management, quality of the marine environment, aquaculture economics, offshore oil and gas management, and natural resource pricing policies.

### Master of Science

*Admission requirements:* the GRE is required. A strong undergraduate record in economics, statistics, and mathematics is highly desirable.

*Program requirements:* for the thesis option, 24 credits including EEC 501, 502, 528, 534, 535, 576, and 599, in addition to a written comprehensive examination, and at least six M.S. thesis credits. For the non-thesis option, 34 credits including 501, 502, 528, 534, 535, 576, and 598, in addition to a written comprehensive examination, and at least one EEC 598 credit given for a substantial paper requiring significant independent research. EEC 501 must be

taken each semester by full-time graduate students in residence, but only one credit may count toward the program.

### Doctor of Philosophy

*Admission requirements:* GRE, six credits in statistics, and the following courses or their equivalents—ECN 327, 328, and 375.

*Program requirements:* the Ph.D. qualifying exam is required of students admitted without the master's degree. EEC 501, 502, 527, 528, 534, 535, 576, 602, 624, 628, 630, 634, 676, and 699 are required. EEC 501 must be taken each semester by full-time graduate students in residence, but only one credit may count toward the program. Students with a master's degree in a closely related field may transfer up to 30 credits toward their Ph.D. Additional courses may be elected from appropriate offerings in economics, resource economics, engineering, geography, oceanography, mathematics, natural resources science, political science, statistics, computer science, finance, marine affairs, and management science. The Ph.D. dissertation will be written on a problem involving marine resources, coastal issues, or an associated industry, such as minerals, petroleum, fisheries, water, transportation, recreation, or waste disposal.

## Environmental Science and Management

(Interdepartmental)

M.E.S.M.  
401-874-4880

*Steering committee:* Assistant Professor F. Meyerson, *chairperson*; Professors Bengtson, Golet, LeBun, and Y.Q. Wang; Associate Professors Boving and Thompson.

*Faculty:* Professors Alm, Amador, J.L. Anderson, August, Bengtson, Boothroyd, Burroughs, Cain, Casagrande, Fastovsky, Gates, Ginsberg, Gold, Golet, Grigalunas, Hennessey, Hermes, Husband, Juda, LeBrun, Logan, Marti, T. Mather, B. Maynard,

Murray, D. Nixon, Opaluch, Paton, Pollnac, Rice, Roheim, Sutinen, Swallow, Swift, and Y.Q. Wang; Associate Professors C. Anderson, Boving, Gomez-Chiarri, McWilliams, Stolt, Thompson, and Veeger; Assistant Professors R. Brown, Macinko, F. Meyerson, L. Meyerson, and Mitkowski; Adjunct Associate Professor Abedon.

The Master of Environmental Science and Management (M.E.S.M.) is an interdisciplinary, interdepartmental, professional degree program designed for students who seek professional environmental positions in areas other than research. It is considered to be a terminal degree; students who plan to pursue a Ph.D. should enroll in the Master of Science in Environmental Sciences degree program. The M.E.S.M. degree program serves graduate students from six departments within URI's College of Environment and Life Sciences (CELS): Environmental and Natural Resource Economics; Fisheries, Animal and Veterinary Science; Geosciences; Marine Affairs; Natural Resources Science; and Plant Sciences. It is administered by a steering committee selected from the graduate faculty.

### Specializations

Conservation biology; earth and hydrologic science; environmental policy and management; remote sensing and spatial analysis; sustainable systems; and wetland, watershed, and ecosystem science.

### Master of Environmental Science and Management

*Admission requirements:* GRE and bachelor's degree in biological science, physical science, environmental science, natural resources, or engineering. Applicants with course deficiencies may be required to take appropriate undergraduate courses for no program credit and to demonstrate, by their performance in such coursework or through a qualifying exam, basic knowledge of the subject matter in the area(s) of deficiency. Application must be made to one of the six specializations.

**Program requirements:** A minimum of 36 credits of course work consisting of 21–25 credits of core courses, including at least 9 credits in natural sciences, at least 6 credits in social sciences, and at least 3 credits in numerical methods; 6–10 credits of electives, up to 3 credits of which might be an internship (EVS 597) with an environmental agency, nongovernmental agency, or private firm; an independent research project (EVS 598) that culminates in a substantial, high-quality, written report; and at least 2 credits of graduate seminar, including a terminal oral presentation. Written comprehensive examination on coursework. There are more specific course requirements and an approved course list for each of the six specializations. Course requirements that are unique to each of the specializations are as follows. *Conservation biology:* 12–16 credits in natural sciences, including at least 3 credits in plant and animal biology, at least 3 credits in ecology, and at least 3 credits in biodiversity analysis and management; and at least 2 credits of graduate seminar from EEC, NRS, or PLS. *Earth and hydrologic science:* 12–16 credits in natural sciences from any or all of the following categories: earth surface processes, hydrology, solid earth materials and processes, or spatial analysis and remote sensing; and at least 2 credits of graduate seminar from GEO, MAF, or NRS. *Environmental policy and management:* 12–16 credits in social sciences, including at least 6 credits in policy, planning, and law and at least 6 credits in economic theory and methods; 9 credits in natural sciences from any or all of the following categories or from numerical methods: geology, hydrology, and soil science; ecology and management; or remote sensing and spatial analysis; and at least 2 credits of graduate seminar from CPL, EEC, GEO, MAF, or NRS. *Remote sensing and spatial analysis:* 12–16 credits in natural sciences, including at least 9 credits in remote sensing and spatial analysis, and 0–7 credits in earth and ecosystem science; and at least 2 credits of graduate seminar from GEO or NRS.

*Sustainable systems:* 12–16 credits in natural sciences, including at least 3 credits in natural ecosystems and at least 3 credits in managed ecosystems; and at least 2 credits of graduate seminar from AFS, EEC, NRS, or PLS. *Wetland, watershed, and ecosystem science:* 12–16 credits in natural sciences, including at least 6 credits in ecosystem science and management and at least 3 credits in earth science, soils, and spatial analysis; and at least 2 credits of graduate seminar from EEC, GEO, MAF, or NRS.

## Environmental Sciences

M.S., Ph.D.

### Entomology

401-874-2791, [uri.edu/cels/pls](http://uri.edu/cels/pls)

*Faculty:* Professor Maynard, *chairperson*; Professor Mather, *director of graduate studies*. Professors Alm, Casagrande, LeBrun, and Logan; Professor in Residence Ginsberg; Adjunct Assistant Professor Gettman.

### Fisheries, Animal and Veterinary Science

401-874-2477, [uri.edu/cels/favs](http://uri.edu/cels/favs)

*Faculty:* Professor Bengtson, *chairperson*; Associate Professor Gomez-Chiarri, *director of graduate studies*. Professors Bradley, Costa-Pierce, DeAlteris, Mallilo, Recksiek, Rhodes, and Rice; Assistant Professors Peterson and Sartini; Adjunct Professors Hoey, Klein-MacPhee, Musick, Serra, and Smolowitz; Adjunct Associate Professors Colwill and Hare; Adjunct Assistant Professors Brumbaugh, Castro, Dudzinski, Gleason, Hancock, Leavitt, Rheault, Petersson, Schwartz, and Wetherbee; Professor Emeritus Chang.

### Geosciences

401-874-2265, [uri.edu/cels/geo](http://uri.edu/cels/geo)

*Faculty:* Professor Murray, *chairperson*; Assistant Professor Boving, *director of graduate studies*. Professor and State Geologist Boothroyd; Professors Cain, Fastovsky, and Hermes; Associate Professor Veeger; Adjunct Professors Burks, Fischer, and Spiegelman.

## Natural Resources Science

401-874-2495, [nrs.uri.edu](http://nrs.uri.edu)

*Faculty:* Professor Paton, *chairperson*; Professor Golet, *director of graduate studies*. Professors Amador, August, Forrester, Gold, Husband, and Wang; Associate Professors Forrester, McWilliams, and Stolt; Assistant Professors F. Meyerson and L. Meyerson; Adjunct Professors Lashomb, Paul, and Perez; Adjunct Associate Professors Abedon, Cerrato, Gorres, Groffman, Jarecki, Nowicki, and O'Connell; Adjunct Assistant Professors Dabek, Kellogg, McKinney, Milstead, Peters, Rubenstein, Saltonstall, Steele, and Tefft; Professor Emeritus Brown and Wright.

## Plant Sciences

401-874-2791, [uri.edu/cels/pls](http://uri.edu/cels/pls)

*Faculty:* Professor Maynard, *chairperson*; Professor Mather, *director of graduate studies*. Professors Casagrande, LeBrun, and Sullivan; Associate Professors Englander and Ruemmele; Assistant Professors Adkins, Brown, and Mitkowski; Professors Emeriti Beckman, Hull, and Jackson.

## Specializations

*Entomology:* insect ecology, pest management, aquatic entomology, plant-insect interactions, biological control, and biology and ecology of disease-transmitting arthropods. The entomology program has a biological quarantine laboratory, the only university-affiliated facility in the Northeast. Faculty and students search abroad for natural enemies of pest species and study them in the laboratory under secure conditions. The laboratory, certified by the U.S. Department of Agriculture as an insect-quarantine facility, is an important component of a long-standing program on insect ecology and the development of environmentally sensitive pest-control measures.

*Fisheries, Animal and Veterinary Science:* aquacultural production of finfish and shellfish, production of terrestrial livestock, physiological and endocrinological aspects of stress in animals, genetics of cultured and wild populations of fish and shellfish, fish

population dynamics, physiological ecology of economically important fish and invertebrates, the pathology of aquatic animals, and the effects of environmental pollution on marine organisms.

**Geosciences:** sedimentology, stratigraphy, paleontology, coastal geology, geoarchaeology, glacial geology, hydrogeology, applied geophysics, GIS mapping, petrology, and structure and tectonics.

**Natural Resources Science:** ecosystem ecology, biogeochemistry, soil genesis and classification, soil ecology and microbiology, biodegradation and bioremediation, hydrology and watershed science, wetland science and management, restoration ecology, landscape ecology, GIS and spatial analysis, wildlife and conservation biology, and avian ecology.

**Plant Sciences:** plant ecology and physiology, plant molecular biology and genetics, plant pathology, environmental horticulture, environmental plant biology, sustainable agriculture, and golf and sports turf management. The department operates 50 acres of turfgrass, horticulture, and plant science research and education farm centers. URI's Turfgrass Center is the oldest turfgrass research and teaching program in the U.S.

**Master of Science (All Environmental Sciences departments or programs except for Fisheries, Animal and Veterinary Science. See separate listing in following section.)**

**Admission requirements:** GRE and bachelor's degree in a biological or physical science, or engineering. Applicants with course deficiencies may be required to take appropriate undergraduate courses for no program credit, and to demonstrate, by their performance in such course work or through a qualifying exam, basic knowledge of the subject matter in the area(s) of deficiency.

**Program requirements:** six credits of thesis and a minimum of 24 credits of course work, including graduate seminar. An oral preliminary examination and advanced seminars may be required in certain fields of study.

### **Doctor of Philosophy (All Environmental Sciences departments or programs)**

**Admission requirements:** GRE and bachelor's degree in a biological science, physical science, natural resources science, or engineering; specific undergraduate majors or course work may be required for certain fields of study. Master's degree with thesis in biological science, physical science, or natural resources science is highly recommended.

**Program requirements:** a minimum of 72 credits of advanced course work beyond the bachelor's degree (a master's degree may count for up to 30 credits), 18 of which are dissertation credits and at least two of which are graduate seminar credits; comprehensive examination; and dissertation. A qualifying examination will be required for students who are admitted without a master's degree and may be required for students whose prior degrees are outside of the proposed Ph.D. field of study.

## **Fisheries, Animal and Veterinary Science**

M.S.  
401-874-2477

See Environmental Sciences for the Ph.D.

**Faculty:** Professor Bengtson, chairperson; Associate Professor Gomez-Chiarri, director of graduate studies. Professors Bradley, Costa-Pierce, DeAlteris, Mallilo, Recksiek, Rhodes, and Rice; Assistant Professors Peterson and Sartini; Adjunct Professors Hoey, Klein-MacPhee, Musick, Serra, and Smolowitz; Adjunct Associate Professors Colwill and Hare; Adjunct Assistant Professors Brumbaugh, Castro, Dudzinski, Gleason, Hancock, Leavitt, Rheault, Petersson, Schwartz, and Wetherbee; Professors Emeriti Chang and Nippo.

### **Specializations**

In the specialization *animal science*, regional, national, and global problems are studied in the areas of animal behavior, endocrinology, nutrition, physiology, and reproductive biology. Both domestic

livestock and laboratory animals are used in a research context. In the specialization *animal health and disease*, animal health problems of regional, national, and global significance are studied. Bacterial and viral diseases are characterized, and the contributions of stress and pathologic conditions to disease are considered.

The *aquaculture* specialization includes the study of aquaculture of finfish and shellfish and the genetics, nutrition, and physiology of fishes. The specialization in *fisheries* includes the study of fisheries science and technology. *Aquatic pathology* deals with the pathology of aquatic animals and the effects of environmental pollution on aquatic organisms.

### **Master of Science**

**Admission requirements:** GRE and an undergraduate major in the biological sciences with a concentration in animal science, fisheries technology, marine biology, microbiology, preveterinary medicine, or zoology, or postgraduate professional degrees (M.D., D.V.M., V.M.D.); one year of organic chemistry and physics. Courses in statistics, histology, and physiology are strongly recommended. A strong background in calculus is expected for *fisheries*.

**Program requirements:** for *animal science*, thesis and 24 credits of course work to include two credits of AFS 501 and/or 502; AVS 412, 472; STA 532. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. For *animal health and disease*, thesis and 24 credits of course work to include two semesters of graduate seminar, AFS 501 and/or 502; AFS 401, 534; STA 532. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor.

For *fisheries*, thesis and 24 credits of course work to include two semesters of graduate seminar, AFS 501 and/or 502; two courses in statistics (at least one at the 500 level); AFS 415, 421. A total of 14 credits of AFS course work must be included in the program of study. Thesis topic and additional course work will be selected

by the student after consultation with, and approval of, the major professor. For *aquaculture*, thesis and 24 credits of course work to include two semesters of graduate seminar, AFS 501 and/or 502; AFS 400, 483, 581, 586. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. For *aquatic pathology*, thesis and 24 credits of course work to include two semesters of graduate seminar, AFS 501 and/or 502; AFS 400, 401, 486; MIC 533. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor.

## History

M.A., M.A./M.L.I.S.  
401-874-2528

**Faculty:** Professor Schwartz, *chairperson*; Associate Professor Rusnock, *director of graduate studies*; Associate Professor Mather, *director of Archaeology and Anthropology option*. Professors Cohen, Honart, Klein, Strom, Thurston, and Weisbord; Associate Professors Ferguson, George, Pegueros, Rollo-Koster, and Sterne; Assistant Professor Buxton; Professors Emeriti Findlay and Kim.

### Specializations

United States, Europe, or archaeology and anthropology option.

**United States or European History:** Students may complement their work with courses in Latin American or Asian history or with courses taken outside the department, particularly in political science, education, English, and languages. Students might also develop programs of study that emphasize regional studies or themes such as race, gender, or family.

The master's program in history includes both class work and individual instruction in the form of 500-level seminars; small 400-level courses that include undergraduates; tutorials; and directed study courses, as well as master's thesis research for those who qualify for the thesis option. All graduate

work stresses independent research and is designed to promote critical reading and writing. The diversified program—with its requirement for work in more than one field of history and the opportunity it offers of work in another discipline—should be of service both to students who wish to continue their graduate education at the doctoral level and to those who are interested in secondary teaching. Students are required to develop a systematic program of studies with the director of graduate studies during their first semester as a master's degree candidate.

For tutorials (HIS 502, 503, 536, 537, 588, and 589), students participate in 300-level courses and complete additional projects assigned by the instructors. Tutorial arrangements are made with the instructor at the beginning of the semester. To be eligible, a graduate student must not have taken the 300-level course—or one closely resembling it—as an undergraduate.

Students may also take up to six credits from the graduate offerings at Rhode Island College (in Providence), or at the Summer Graduate Program in Maritime History of the Munson Institute, Mystic Seaport, New London. These courses must be approved for program credit prior to registration and are included in the six-credit maximum for transfer credit and the 12-credit maximum for advanced standing.

**Archaeology and anthropology:** Students study method and theory in history, anthropology, and archaeology and the connections among the disciplines. The option is offered in cooperation with the Department of Sociology and Anthropology and the Department of Art (Art History). It includes both class work and individual instruction in the form of 500-level seminars, small 400-level courses, tutorials, and directed study courses. Students enrolled in this option are encouraged to work on thematic links across the disciplines such as maritime history and underwater archaeology, social history and cultural anthropology, or ancient history and classical archaeology.

The archaeology and anthropology option serves the needs of students looking for interdisciplinary opportunities in history,

anthropology, and archaeology. It also provides essential humanistic and social science training for Ph.D. students in geological/archaeological oceanography.

## Master of Arts

**Admission requirements:** GRE and bachelor's degree. While 24 credits of history are usually required, majors in related fields may be admitted with permission of the director of graduate studies and the department chairperson. For the proposed archaeology and anthropology option, credits in anthropology, archaeology, art history, and related fields may be accepted with permission of the director of graduate studies, in consultation with graduate faculty from the Departments of History, Art, and Sociology and Anthropology.

**Program requirements:** For the United States or Europe specializations, there are thesis and non-thesis options. In both options, the student must declare a primary concentration in European or United States history, and a secondary concentration in another area of history or in a related field outside the department. For students in the proposed archaeology and anthropology specialization, a thesis option will not be available, but each student must complete a major research paper in HIS 591. For all specializations, an approved program will require 30 credits.

**United States or European History specialization program requirements:** Of the 30 required credits, at least three must be from HIS 401, 441, or 481 and at least nine credits from HIS 506, 507, and 508. Three of these nine credits may be filled by a 500- or 600-level seminar in another department. The non-thesis option will require completion of a research paper in HIS 495, or, in exceptional circumstances, in another graduate-level course with permission of the instructor and the graduate director or department chair. Admission to the thesis option will be granted after evaluation by the director of graduate studies and two faculty members who are familiar with the student's first year of graduate work.

In the nonthesis option, the student may earn no more than 12 credits in tutori-

als (502, 503, 536, 537, 588, and 589) and directed studies (591). Nine credits will normally be taken in the secondary concentration. A written comprehensive examination in the student's primary and secondary concentrations and a follow-up oral examination are required. The examining committee will normally consist of two faculty members from the student's primary concentration and one from the secondary concentration. In the thesis option, the student may earn a maximum of nine credits of HIS 599, a maximum of three credits of Directed Study (HIS 591), and a maximum of nine credits of tutorials (HIS 502, 503, 536, 537, 588, 589). Work in the secondary concentration may be limited to six credits.

*Archaeology and anthropology specialization program requirements:* Of the 30 required credits, students must select at least three from HIS 401, 441, or 481; at least three credits from APG 401, 413, or 427; and at least three credits from HIS/APG 490, APG 417, and ARH 475/575. Students must take an additional six credits of 500-level history courses, including at least three credits from HIS 506, 507, or 508. Students must also take ARH/APG 465 or 565. The remaining credits are to be selected from the following approved electives: Any 400- or 500-level history course, any anthropology course listed above; any art history course listed above; APG 470; ARH 469, 470, 480; NES 400; TMD 440, 510, 520, 524, 570. Up to six credits of other graduate courses may be substituted for approved electives with approval of the student's major professor and option coordinator. A comprehensive examination and a follow-up oral examination are required. The examining committee will normally be comprised of at least two faculty members from history, and one each from anthropology and art.

#### **M.A. in History and M.L.I.S. Cooperative Program**

By proper selection of course work, a student may simultaneously earn the degrees of Master of Arts in history and Master of Library and Information Studies.

Admission requirements: GRE and other requirements listed for history and library science. Applicant must apply and be accepted in both programs. The application for each program must indicate history/library and information studies as the field of specialization.

Program requirements: students must submit individual programs of study for the 42-credit M.L.I.S. program and the 30-credit program for the M.A. in history. The integrated pursuit of the two degrees makes it possible for six credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of course work to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 60 credits rather than 72 credits.

#### **Human Development and Family Studies**

M.S. (specializations listed below)  
401-874-2150

*Faculty:* Professor Adams, *chairperson.*

**Human Development and Family Studies**  
Associate Professor McCurdy, *director.*  
Professors Gray Anderson, Clark, Cohen, Newman, and Xiao; Associate Professor Kalymun; Adjunct Professors P. Newman and Prochaska; Professor Emerita Rae.

#### **Marriage and Family Therapy**

Professor Adams, *director.* Assistant Professors Kisler and Sparks; Professors Emeriti Maynard and Rae.

#### **College Student Personnel**

Associate Professor Branch, *director.*  
Associate Professor Knott; Professor Emeritus Schaffran.

#### **Human Development and Family Studies**

This program is designed to immerse students in a specialized area of human development and family studies, while providing a strong emphasis on policy, research, and practical knowledge of the field. Graduates from this program are prepared

for leadership positions in human service and education administration, research and policy organizations, and for advanced academic work at the Ph.D. level.

*Admission requirements:* GRE or MAT, and 18 undergraduate credits distributed among the following areas: human development and family studies, psychology, and sociology. Majors in related fields (e.g. nursing, political science, education) may be admitted with the permission of the director of graduate studies. Three letters of recommendation are required with at least one from an academic reference. Application deadline for fall admission is March 30. Applications received after this date will be reviewed on a space-available basis.

*Program requirements:* a minimum of 41 credits of approved graduate courses that include a developmental seminar; a sequence in policy, research, and statistics; and a professional seminar. In addition, students will select a minimum of 9 credits in a specialization, such as child development, early childhood education, adult development/gerontology, public policy/administration, family studies, and family financial counseling/education. Students complete a comprehensive examination and a master's thesis. Students will have the option of including up to six credits of a policy, administrative, or research internship as part of the program of study.

*Early Childhood Education (ECE):* If you wish to pursue early childhood education teacher certification (nursery to grade 2) and do not have a human development and family studies background, you will need to take certain courses from the HDF undergraduate curriculum and should consult an HDF advisor. Students apply to URI's Teacher Certification Program (nondegree status) administered through the Graduate School and must submit a candidate's statement, official transcripts of all previous course work, and two letters of recommendation. Applicants must also complete the same ECE admission process as undergraduate students, including the portfolio, admission tests, and interview coordinated through the University's Office of Teacher Education.

## Marriage and Family Therapy

*Admission requirements:* GRE or MAT; at least 12 credits of relevant preparation, including courses in family relations, developmental theory, abnormal psychology, and introduction to counseling or equivalent courses. Two letters of recommendation should be from supervisors in a related field attesting to observed experience, emotional stability, and maturity. After initial screening, qualified applicants will be required to come to campus for a personal interview. The goal of the personal interview is to determine whether the applicant possesses the full range of academic qualifications, experiential background, clinical competency, and readiness to undertake the rigors of an academically and emotionally demanding clinical preparation program. Program faculty members will conduct the interviews. Selection for admission to this program is competitive and enrollment is limited. Diversity among the students in the program is a major program goal. The program is accredited by the Commission on Accreditation for Marriage and Family Therapy Education. Review of applications begins February 1.

*Program requirements:* a minimum of 45 credits of approved graduate courses, including 12 credits of practica and internship, a comprehensive examination, and a research project. This program involves intense clinical practice and requires a year-long clinical placement at approved agencies or the department's Family Therapy Clinic.

## College Student Personnel

The mission of URI's College Student Personnel program is to prepare reflective practitioners for professional careers in student affairs. Graduates seek entry-level positions such as advisors, coordinators, directors, and deans at institutions of higher education. Our vision is to engage one another in an extended community of co-learning relationships that inspire optimal development and promote growth in leadership, all based on creating and sustaining

the best practices in college student personnel preparation and professional work.

*Admission requirements:* At least two letters of recommendation (one faculty member and one practitioner), interview, and résumé; preference is given to applicants with experience in college student affairs. Personal statement should indicate reasons for pursuing graduate work in college student personnel and future professional interests in the field. Application deadline for assistantship interviewing and fall admission is January 1; for final fall admission is April 1.

*Program requirements:* 42-credit program consisting of 26 credits in core HDF courses: 551, 560, 562, 567, 568, 570, 572 [1], 573 [1], 574, 575 [1], 576 [2], six elective credits, a multi-part comprehensive examination, plus one of the following capstone options: nonthesis internship (HDF 580 [2], 581 [2], 583, 584), nonthesis action research project (HDF 595 [6], HDF 580 [1], HDF 553), or thesis (HDF 599 [6], HDF 580 [1], HDF 553).

## Industrial and Systems Engineering

M.S. (Manufacturing Systems Engineering)  
Ph.D. (Industrial and Manufacturing Engineering)  
401-874-2455

*Faculty:* Professor Wang, *chairperson*; Professor Knight, *director of graduate studies*. Professors Dewhurst and Sodhi; Assistant Professor Maier-Speredelozzi; Adjunct Professors Miller and Jones; Professors Emeriti Boothroyd and Nichols; Associate Professors Emeriti Lawing and Shao.

## Specializations

Fundamentals of manufacturing processes and manufacturing automation; computer systems in manufacturing, including applications for inspection, rapid prototyping, and control.

Product design for manufacture and assembly, and design evaluation for reliability, maintenance, and recycling.

Engineering optimization including linear, non-linear, integer, and stochastic optimization.

Facilities planning and analyses of material handling in manufacturing organizations; lean manufacturing.

Quality and process control of production.

## Financial Aid

A number of graduate and research assistantships are available for qualified graduate students.

## Master of Science

*Admission requirements:* B.S. degree in industrial, manufacturing, or mechanical engineering; applicants with a B.S. in another field of engineering, mathematics, physics, chemistry, or computer science will be considered, but will be required to complete some deficiency courses. GRE required for graduates of non-U.S. universities only.

*Program requirements:* The thesis option requires 30 credits including thesis (six to nine credits); IME 533, 545, 549 or 550 or 591/592; at least three elective courses from at least two of the following areas: fundamentals of manufacturing processes and manufacturing properties of materials, design for manufacture and assembly, quality engineering, simulation, and control and optimization of manufacturing systems.

The nonthesis option (for part-time students with department permission) requires 30 credits of course work including IME 533, 545, 549 or 550 or 591/592; plus at least 15 credits from at least three of the following areas: fundamentals of manufacturing, processes and manufacturing properties of materials, design for manufacture and assembly, quality engineering, simulation, and control and optimization of manufacturing systems. A comprehensive examination must also be taken on three of the above areas. IME 240 or equivalent is a prerequisite.

*Program mission statement:* Consistent with the department's mission, the M.S. program will enhance the technical skills and professional competence of graduate

engineers, positioning them to improve manufacturing competitiveness. Program graduates will have:

- 1) Proficiency in a broad range of basic engineering skills, including manufacturing properties of materials and manufacturing process, consistent with an ABET-accredited graduate engineering program;
- 2) Understanding of the application of methods to increase the competitiveness of products and processes;
- 3) Understanding of the relationships between product design decisions and the development of competitive products, through reduced cost and improved manufacturing efficiency;
- 4) Advanced proficiency in selected topics in manufacturing processes and manufacturing properties of materials, manufacturing systems engineering, and computer applications related to manufacturing;
- 5) The ability to carry out an independent research study in a selected area or demonstrated knowledge of a broad range of related topics; and
- 6) Advanced proficiency in student-selected topics in manufacturing engineering, manufacturing properties of materials, industrial engineering, and related disciplines.

## Doctor of Philosophy

*Admission requirements:* B.S. degree in industrial, manufacturing, or mechanical engineering; an applicant with a B.S. degree in another field of engineering or in mathematics, physics, chemistry, or computer science will be considered; such applicants will be required to complete some deficiency courses. Although a person with a bachelor's degree may be admitted, this program is designed principally for people who have a master's degree. GRE required for graduates of non-U.S. universities only.

*Program requirements:* qualifying examination may be waived for students with a master's degree. A minimum of 72 credits beyond the B.S. degree, 18 of which are dissertation credits (a master's degree may count for up to 30 credits). A total of 54 credits of course work is required, including

IME 533, 545, 549 or 550 or 591/592; and 24 credits from at least three of the following areas: fundamentals of manufacturing processes and manufacturing properties of materials, design for manufacture and assembly, quality engineering, simulation, and control and optimization of manufacturing systems. Eighteen credits of IME 699. Reading proficiency in a foreign language may be required by the student's committee. A comprehensive examination must be taken after all formal course work is completed. All Ph.D. candidates must register full-time for two consecutive semesters prior to taking the Ph.D. comprehensive examination. Dissertation research makes use of major modern laboratories in the listed areas of specialization.

*Also see Applied Mathematical Sciences.*

## Kinesiology

M.S.  
401-874-2976

*Faculty:* Professor Lamont, *director of graduate studies*. Professors Manfredi and Riebe; Associate Professor Blissmer; Assistant Professors Ciccomascolo, Delmonico, Ellis, Kusz, and Xu; Professor Emerita Bloomquist.

## Specializations

Exercise science; adapted physical education; physical education pedagogy; cultural studies of sport and physical culture; psychosocial /behavioral aspects of physical activity.

## Master of Science

*Admission requirements:* MAT or GRE with B.S. degree in physical education, exercise science, kinesiology, or related discipline. An applicant with a degree in an unrelated field who possesses a strong emphasis in the sport sciences may be considered. Completed application packages should be sent to the Director of Graduate Studies, URI Department of Kinesiology, 126 Tootell, and must be received by April 15 for September admission, or October 15 for January admission. Applications received

after April 15 but before July 15 will be reviewed on a space-available basis.

*Program requirements:* 32 credits, including 11 credits in core courses and six (nonthesis option) to nine (thesis option) of research requirements. The required core courses are KIN 501 (must be repeated twice), 508, 578, and 515 or 562. The required research courses are KIN 530 and 599 (thesis option) or 591 (nonthesis option). Required courses for exercise science include selecting nine to 12 credits from KIN 559, 563, 564, 565, 524, 531, and 592, plus up to six credits of electives. Required courses for adapted physical education include KIN 545, 585, and 580, plus three to six credits of electives. Required courses for physical education pedagogy include KIN 510, 545, and 580, plus three to six credits of electives. Required courses for cultural studies of sport and physical culture include KIN 478 and 465, plus six to nine credits of electives. Required courses for psychosocial/behavioral aspects of physical activity include KIN 563 and 581, plus six to nine credits of electives.

## Physical Education Teacher Certification (PETE-TCP)

This program is for students who wish to become certified as physical education teachers. The program is designed for students who hold a bachelor's degree in physical education, kinesiology, or a related field. Students who do not have a physical education background will need to take additional prerequisite undergraduate courses and should consult with a PETE advisor. Students apply to the PETE-TCP (non-degree status) administered through the Graduate School, and must submit a candidate's statement, official transcripts of all previous course work, and two letters of recommendation. Applicants must also complete the same PETE admission process as undergraduate students, including a portfolio, admission tests, and interview coordinated through the URI Office of Teacher Education. Details related to the admission process can be found on the School of Education and kinesiology department Web sites.

## Labor Relations and Human Resources

M.S., M.S./J.D.  
401-874-2239

*Faculty:* Professor Scholl, *director*, Schmidt Labor Research Center. Professors Beauvais, Burkett, Cooper, Croasdale, Lardaro, McIntyre, Miller, Molloy, Overton, Poggie, Rothstein; Associate Professor Bodah; Adjunct Professors Keating and Taylor; Professors Emeriti Gersuny, Rayack, and Schmidt.

This program is designed for union, government, neutral, or human resource management, labor, and industrial relations professionals, or for those students who aspire to such positions. Students in other graduate programs may find it rewarding and professionally desirable to enroll in one or more of the labor relations and human resource courses. All courses are offered in the very late afternoon or in the evening in Providence and Kingston so that they are convenient for working students. Full-time and part-time programs are also available.

### Specializations

Areas of specialization include labor relations and human resources, both with elective and required courses. Substitutions may be made with permission of the director of the Schmidt Labor Research Center and approval of the Graduate School. Exceptional students who come into the program with a well-defined interest, as well as a proposed plan of study, may choose to create their own specializations by choosing four courses in an area that satisfies their professional needs, e.g., computer science or statistics, economics or social policy, law and legal processes, or workplace issues such as alcohol and drug abuse, sexual or age discrimination, or racism.

### Master of Science

*Admission requirements:* GRE or MAT or GMAT. Undergraduate majors in any field are considered for admission; those with majors in social science, history, manage-

ment, and labor studies are especially encouraged to apply, as are those with engineering, nursing, education, urban affairs, black studies, and women's studies backgrounds. Professional experience in labor and industrial relations will carry additional weight in admission decisions.

*Program requirements:* minimum of 39 credits, including 27 credits in core courses and 12 credits of specialization. The required courses are LRS/HIS 544; LRS/PSC 521; LRS/ECN 526; LRS 531, 541, 542, 500, 551, and 580. For a specialization in labor relations, select two courses from LRS 520, 543, and 545; and two courses from LRS 432, 503, 532, 533, 546, 579, 581, 591, and MBA 577 and 578. For a specialization in human resources, required courses include two courses from LRS 432, 503, 520, 532, 533, 543, 545, 546, 579, 581, 591, and MBA 502, 577, and 578. Students are advised that many of the core required courses and electives in the program assume competence in basic statistics and economics as well as a working knowledge of computers. Students should remedy any deficiencies in these areas either prior to or during enrollment in the program. Please contact the director of the Schmidt Labor Research Center for further advice.

### Joint Program: Master of Science in Labor Relations and Human Resources (URI) and Juris Doctorate (Roger Williams University School of Law)

A cooperative dual degree program offered at URI and Roger Williams University School of Law permits dual enrollment leading to an M.S. in labor relations and human resources and a J.D. The integrated program of the two degrees allows a student to complete both programs in four years instead of the five required if both degrees are pursued separately.

*Admission requirements:* Students must apply and be accepted into each program under the separate admission requirements currently in effect at each school. Applicants must indicate the M.S./J.D. on the "Degree Sought" section of the URI application form.

*Program requirements:* At Roger Williams University, the J.D. program requires 90

credits, which can be completed on a full-time basis in three years. The M.S. degree in labor relations and human resources at URI requires 39 credits, which can be completed on a full-time basis in two years. A student matriculated in the joint program will take some credits in one program that will help satisfy the overall credit requirements of the other degree program as well. Students in the joint program must complete the following core required courses as part of their 30-credit requirement at URI in addition to nine credits taken at Roger Williams: LRS 542, 500, 551, and 580; LRS/PSC 521; LRS/ECN 526; and LRS/HIS 544. Students who specialize in human resources must also take MBA 577 and 578, while students specializing in labor relations must take LRS 520 and 545. Students must complete the required law school curriculum at Roger Williams. For students matriculated in the joint program, Roger Williams will accept the following 15 URI credits to satisfy the requirements for the J.D. degree: LRS 542, 500, and 580; LRS/ECN 526; and LRS/PSC 521.

### Graduate Certificate Programs in Labor Relations and Human Resources

*Admission requirements:* Applicants with undergraduate majors in any field are considered for admission; applicants must submit two official transcripts of all academic work, two letters of recommendation, and a resume of professional experience.

*Program requirements:* To earn a graduate certificate in Labor Relations, students must satisfactorily complete four of the following courses: LRS 432, 500, 520, 521, 526, 531, 532, 533, 541, 542, 543, 545, 546, and 579. To earn a graduate certificate in Human Resources, students must satisfactorily complete four of the following courses: LRS 500, 503, 526, 531, 532, 533, 541, 542, and 551; MBA 502, 577, and 578.

### Languages

See Spanish.

## Library and Information Studies

M.L.I.S., Cooperative Programs  
401-874-2947

*Faculty:* Professor Eaton, *director, Graduate School of Library and Information Studies;* Professor Carson, *assistant director and coordinator of distance learning.* Professors Gilton, Havener, Ma, and McCarthy; Assistant Professor Caldwell.

The Master of Library and Information Studies (M.L.I.S.) degree prepares students for professional service and leadership in libraries and other organizations, including information positions in business and government. Specializations include service to children and young adults, reference and bibliography, organization of information, technical services, information literacy instruction, special collections and rare books, automation, information science, and others. The program leading to the M.L.I.S. is accredited by the American Library Association (ALA).

The School Library Media Specialist certification program leads to both the M.L.I.S. and K-12 certification. It is approved by the Rhode Island Department of Education and accredited by the National Council for the Accreditation of Teacher Education (NCATE).

## Master of Library and Information Studies

*Admission requirements:* bachelor's degree (B average); if undergraduate GPA is below 3.00 or equivalent, GRE or MAT at the 50th percentile or above. The completed application package should be received by October 15 for spring admission, March 15 for summer admission, and June 15 for fall admission.

*Program requirements:* 42 credits, 18 in required core courses (LSC 502, 503, 504, 505, 508, and 557) and 24 in electives, six of which may be taken in courses outside

library science when relevant to the student's specialization; one course with major paper requiring significant independent research; and a written comprehensive examination. Students in the school library media program must take both LSC 530 and LSC 531 and are not required to take LSC 503. Other students who take both LSC 530 and LSC 531 may also waive LSC 503. No more than nine credits or three courses may be taken in nonmatriculating status for transfer into the degree program.

Requirements for the M.L.I.S. must be completed within a period of four calendar years. A one-year extension, to five calendar years, may be granted for good cause by the G.S.L.I.S. faculty with notice to the dean of the Graduate School in response to a student's petition. Further extensions, to a maximum of seven calendar years, are possible under Graduate School policy, but are generally undesirable because of the rapid change in library and information services. If such extensions are granted, courses completed more than five calendar years prior to graduation will no longer be valid, and must be replaced by new courses or reinstated by examination to ensure that the graduate's knowledge of the field is current.

*Teacher certification track:* To meet state requirements, students in the M.L.I.S. program who wish to pursue teacher certification as school library media specialists must take specific courses including three graduate credits in education/instruction (unless already certified as a teacher). Students should consult with their advisors to be sure they are meeting all certification requirements. See Teacher Certification.

G.S.L.I.S. also offers a teacher certification program (TCP) with a specialization in school library media for individuals who already hold accredited M.L.I.S. degrees. Candidates for certification must apply for admission following G.S.L.I.S. guidelines and complete the same requirements as M.L.I.S. students in the school library media track.

## Certificate in Information Literacy Instruction

A 15-credit post-baccalaureate certificate in Information Literacy Instruction (ILIC) is open to current students (who may take it as part of their M.L.I.S. program) and college graduates with or without the M.L.I.S. Completion of the following courses is required: LSC 504, *Reference and Information Studies;* LSC 524, *Teaching About Information;* LSC 525, *Multiculturalism in Libraries;* LSC 527, *Information Literacy Instruction;* LSC 528, *Instructional Technology in Library and Information Services.*

Candidates for the ILIC must apply for admission following G.S.L.I.S. guidelines and will be required to earn a grade of B or better in each course. A maximum of three graduate credits will be accepted from another graduate library school program for transfer of credit.

## M.A. in History and M.L.I.S. Cooperative Program

By proper selection of course work, a student may simultaneously earn the degrees of Master of Arts in history and Master of Library and Information Studies.

*Admission requirements:* GRE (subject test desirable) and other requirements listed for history and library science. Applicant must apply and be accepted in both programs. The application to each program must indicate history/library and information studies as the field of specialization.

*Program requirements:* Students must submit individual programs of study for the 42-credit M.L.I.S. program and the 30-credit program for the M.A. in history. The integrated pursuit of the two degrees makes it possible for six credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of course work to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 60 credits rather than 72 credits.

## M.P.A. and M.L.I.S. Cooperative Program

A second cooperative program permits joint enrollment in the Master of Library and Information Studies and Master of Public Administration programs. The integrated pursuit of the two degrees makes it possible for nine credits of appropriately selected course work from one program to serve as electives in the other, and for six credits to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 63 credits.

*Admission requirements:* GRE and other requirements listed for M.L.I.S. and M.P.A. Applicant must apply and be accepted in both programs. The application to each program must indicate M.L.I.S./M.P.A. as the field of specialization.

*Program requirements:* Each student must complete the required core courses for both programs plus three credits of PSC 590 for the M.P.A. After consultation with, and approval of, both departments, students must file separate programs of study for each degree, indicating the courses to be jointly counted. Each student must pass the separate comprehensive examination for each degree.

## M.A. in English and M.L.I.S. Cooperative Program

By proper selection of course work, a student may simultaneously earn the degree of Master of Library and Information Studies and Master of Arts in English.

*Admission requirements:* GRE and all other requirements listed for M.L.I.S. and M.A. in English. Applicant must apply to both programs and be accepted by both. The application to each program must indicate English/library and information studies as the field of specialization.

*Program requirements:* Students must submit individual programs of study for the 42-credit M.L.I.S. program and the 30-credit M.A. in English. The integrated pursuit of the two degrees makes it possible for six credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of

course work to be applied in the opposite direction. ENG 510, 511, and 514 are required. Thus, when planned and taken jointly, the two programs can be completed with a total of 60 credits rather than 72. Students must complete at least 36 credits in librarianship and at least 24 credits in English.

## Other Cooperative Programs

Under existing University policy, students may be able to establish cooperative programs with other master's degree programs within the University. Interested persons should consult with the director. A student who fails to complete one of the programs may, of course, complete the other in accordance with the separate program of study.

## Marine Affairs

M.A., M.M.A., M.M.A./J.D.–RWU, Ph.D.  
401-874-2596

*Faculty:* Professor Juda, *chairperson*; Professor Burroughs, *director of master's studies*; Assistant Professor Macinko, *director of Ph.D. studies*. Professors Hennessey, Marti, Nixon, and Pollnac; Assistant Professors Dalton, Macinko, and Thompson; Adjunct Assistant Professor Fletcher; Professors Emeriti Alexander, Knauss, and West; Associate Professor Emeritus Krausse.

## Specializations

Ecosystem-based management of coastal/ocean areas, coastal zone management, marine transportation and port planning, fisheries law and management, international marine policy and law.

## Master of Arts (M.A.)

*Admission requirements:* GRE and bachelor's degree in related science or social science. For international students, minimum TOEFL scores on the iBT as follows: Reading, 20, Writing 22, Listening 17, and Speaking 17 (total of 213 CBT or 550 PBT). Full-time applicants are admitted for the fall semester only.

*Program requirements:* thesis and MAF 482, 502, 577, 651; MAF 511 or appropriate oceanography substitute; EEC 514 or appropriate resource economics substitute; plus a minimum of 21 elective credits for a total of 45 credits.

## Master of Marine Affairs (M.M.A.)

*Admission requirements:* prior graduate degree or five years of equivalent experience in marine areas. For international students, minimum paper TOEFL scores on the iBT as follows: Reading, 20, Writing 22, Listening 17, and Speaking 17 (total of 213 CBT or 550 PBT). Full-time applicants are admitted for the fall semester only.

*Program requirements:* nonthesis program; EEC 514; MAF 577, 589, 651, 511 or appropriate oceanography substitute; plus 15 elective credits for a total of 30 credits; written comprehensive examination.

## M.M.A./J.D. Joint Program between URI and Roger Williams University Law School

*Admission requirements:* students will have to apply and be accepted into each program under the separate admission requirements currently in effect at each school.

*Program requirements:* The Roger Williams University J.D. program requires 90 credits, which can be completed on a full-time basis in three years. The M.M.A. degree at URI requires 30 credits, which can be completed on a full-time basis in one year. A student matriculated in the joint program will take some credits in one program which will also help satisfy the overall credit requirements of the other degree program. The effect of these credit transfers would be to reduce the total time needed to complete both degrees from four to three and one-half years. Students in the joint program must complete MAF 511, 577, 589, 651, and EEC 514 or their equivalent as part of their 24-credit requirement at URI in addition to six credits at Roger Williams. As is the case with other M.M.A. students, students in the Joint Program take a written comprehensive examination. Roger Williams students must complete the

required law school curriculum and may apply nine marine affairs credits toward the J.D.

### Doctor of Philosophy

*Admission requirements:* the Ph.D. program is small and selective. Admission is based on academic merit, research capability, availability of faculty, and match of interests between applicant and faculty. Applicants must have completed work for the master's degree in some related area. GRE, letters of recommendation, writing samples including master's thesis or major research paper, statement of purpose, and interview are required.

The statement of purpose shall include a description of the intended research topic and the names of the professors most suited to direct the research. Consult the department Web pages ([uri.edu/cels/maf](http://uri.edu/cels/maf)) for current research interests of the faculty.

*Program requirements:* students must complete the following required courses or their equivalents (18 credits): MAF 482, 502, 511, 577, 651; EEC 514. Beyond the courses indicated above, Ph.D. candidates are required to complete a minimum of 48 additional credits, of which no more than 24 will be awarded for dissertation research. The course credits earned to meet this requirement will be selected by the student from among 500- and 600-level courses with the approval of the student's Ph.D. committee. Students will have to demonstrate proficiency in research tools, foreign language(s), and/or statistics as appropriate for the proposed course of study and dissertation. Required capabilities will be determined by the Ph.D. committee.

Upon completion of course work, students will have to pass written and oral comprehensive examinations in major and minor fields of marine affairs. Each student is to write and successfully defend a dissertation of high quality.

### Mathematics

M.S., Ph.D.  
401-874-2709

*Faculty:* Professor Pakula, *chairperson*; Professor Lewis, *director of graduate studies*. Professors Beauregard, Clark, Eaton, Finizio, Grove, Kaskosz, Kulenovic, Ladas, Merino, and Montgomery; Associate Professors Baglama, Kook, Thoma, and Wu; Assistant Professor Medina-Bonifant; Professors Emeriti Datta, Driver, Fraleigh, Roxin, Schwartzman, Suryanarayan, and Verma.

### Specializations

Ordinary, functional, partial differential equations, abstract differential equations, difference equations, functional analysis, approximation theory, probability, fluid mechanics, and control theory.

### General Information

Programs of study can be designed for individuals who are employed on a full-time basis. However, all Ph.D. candidates must register full-time for two consecutive semesters prior to taking the doctoral comprehensive examination.

### Master of Science

*Admission requirements:* bachelor's degree with strong undergraduate background in mathematics. Applicants with deficiencies in mathematics may be accepted subject to taking certain undergraduate courses in addition to the graduate program requirements.

*Program requirements:* 30 credits (or 24 plus thesis), including at least 18 credits in mathematics of which at least 12 must be at the 500 level or above. A course requiring a substantial paper involving significant independent study and a written comprehensive examination are required for the nonthesis option. MTH 435 and 513 must be completed with a grade of A or B. Recommended courses include MTH 515, 525, 535, 536, and 562.

### Doctor of Philosophy

*Admission requirements:* same as for master's program.

*Program requirements:* MTH 513, 515, 525, 535, 536, and 562, plus specialized courses and electives. Reading ability (in candidate's specialty and with a dictionary) in one language chosen from French, German, or Russian. A Ph.D. qualifying examination is required of all students admitted without a master's degree in mathematics.

Also see the listing under Applied Mathematical Sciences.

### Mechanical Engineering and Applied Mechanics

M.S., Ph.D.  
401-874-2524

*Faculty:* Professor Shukla, *chairperson and Simon Ostrach professor*; Professor Sadd, *director of graduate studies*. Professors Datseris, Faghri, Ghonem, Jouaneh, Kim, Lessmann, Palm, Taggart, and Zhang; Associate Professors Chelidze, Meyer, and Rousseau; Adjunct Associate Professor Tucker; Adjunct Assistant Professor Gomez; Professor Emeritus White.

### Specializations

*Fluid mechanics:* boundary layers, separated flows, turbulence, particle-flow interactions, flow measurement, computational fluid dynamics, flow in human airways, flow in microgeometries, biotribology (lubrication, friction, wear), ferrography, flow of drug delivery in human body.

*Robotics and design:* robotics, automation, automated assembly, expert systems, plasma welding and fusion, design optimization, computer-aided design, precision engineering, manufacturing.

*Solid mechanics:* elasticity, plasticity, continuum mechanics, fracture mechanics, photomechanics, impact mechanics, wave propagation and dynamic geomechanics, computational methods, composite and ceramic materials, micromechanics, non-

linear mechanics, waterjet processing, fiber optic sensors, tribology (lubrication, friction, wear).

*Systems and control:* robotics, control systems, microprocessor and digital control, system dynamics, damage evolution, precision engineering, advanced dynamics, vibrations.

*Thermal science:* phase change problems, ice making, microscale convection heat transfer, direct contact heat transfer, direct energy conversion, solar energy, new engine designs, thermal pollution, computational heat transfer.

### General Information and Financial Aid

Programs of study can be designed for individuals who are employed full-time. However, all Ph.D. candidates must register full-time for two consecutive semesters prior to taking the comprehensive exam.

A number of graduate and research assistantships are also available for qualified M.S. and Ph.D. students.

### Master of Science

*Admission requirements:* B.S. degree in mechanical engineering, applied mechanics, aerospace engineering, or a related field such as engineering science, civil engineering, applied mathematics, or applied physics. Students admitted to the program will be expected to have the equivalent of MCE 372. Students without this background may be required to make up this deficiency with no program credit. GRE required of foreign applicants only.

*Program requirements:* for thesis option, 30 credits exclusive of seminar, including six to nine credits of thesis (required of all full-time students) and 21–24 credits of course work; one course in each of the three department core areas from the following selections: fluid mechanics/thermal sciences—MCE 545, 551; solid mechanics—MCE 561, 571; mechanical systems—MCE 563, 564, 566; and MCE 501, 502, graduate seminar (required of all on-campus students). For nonthesis option for part-time students only, 30 credits, one course in each of the

department core areas; one course requiring a substantial paper involving significant independent study; and a comprehensive examination.

### Doctor of Philosophy

*Admission requirements:* master's degree. Exceptional students with a bachelor's degree and superior master's candidates will also be considered. GRE required of foreign applicants only.

*Program requirements:* Ph.D. candidacy review after completion of first year of full-time study (or nine credits for part-time students). The purpose of this review is to determine the candidate's initial progress toward the doctorate, and it is conducted jointly by the department's graduate committee and student's doctoral committee, evaluating both the student's course work and any beginning research activity. Completion of a minimum of 24 credits of course work beyond the master's degree, exclusive of seminar (48 credits of course work after bachelor's degree); MCE 501, 502, graduate seminar (required of all on-campus students). Comprehensive examination and dissertation.

### Microbiology

See Cell and Molecular Biology.

### Music

M.M. in Music Performance or Music Education (options described below)  
401-874-2431

*Faculty:* Professor Lee, *chairperson*; Assistant Professors Aberdam and Takasawa, *co-directors of graduate studies*. Professors Dempsey, Kent, Ladewig, Livingston, and Pollart; Associate Professors Conley, Danis, and Parrillo; Assistant Professor A. Cardany; Lecturers B. Cardany, de la Garza, Frazier, Murray, and Thomas; Professors Emeriti Abusamra, Burns, Ceo, Fuchs, Gibbs, and Rankin.

### Specializations

*M.M. in Music Performance:* 12 credits of performance in MUS 510 (minimum of three in a semester) plus MUS 548, 550 or 552, 567, 580 (not required for students whose bachelor's degree is from URI), 581, and three credits distributed according to the option selected.

*Voice or Instrument option:* For vocalists, two credits in MUS 598 and music elective. Vocalists are also tested in diction and reading in Italian, Latin, French, German, and English. For *pianists*, two credits in MUS 590 or 598 and music elective. For *organists*, *guitarists*, and *other instrumentalists*, two credits in MUS 598 and music elective.

*Conducting option:* Electives appropriate to conducting.

*Composition option:* Electives appropriate to composition.

All performance candidates must also take a minimum of nine credits of electives from music history and theory/composition (no more than six credits in any one of these two areas), and pass a written comprehensive examination in music history, theory, and the performance major after 15 hours of study have been completed.

*M.M. in Music Education:* MUS 540, 545, 548, 579, 580 (not required for students whose bachelor's degree is from URI), 581, and nine credits in one of the following options:

*Performance/essay option:* Six credits of MUS 510 (2 + 2 + 2 or 3 + 3 credits), 550 (for 0 credit), and 570.

*Conducting option:* MUS 510Y (2 + 2 or 4) for four credits, MUS 510Z (2 + 2 or 4) for four credits, and MUS 550 for one credit.

*Composition (classical or studio) option:* Six credits of MUS 510V (2 + 2 + 2 or 3 + 3), MUS 510Y or MUS 510Z (3), and 552 (0). Credits recommended for studio composition are MUS 510V in jazz arranging and composition, MUS 579 in the jazz/studio area, (e.g., a professional recording studio), 596, or 598].

*Thesis option:* at least six credits in MUS 599 and three elective credits.

All music education candidates must also take a minimum of nine credits of electives from music history, theory/composition, and performance (no more than six credits in any one of these three areas, and performance only if it is not already part of the option selected). Students in a *thesis option* must pass a written qualifying examination before thesis work is begun and defend the thesis in a final oral examination. All other music education candidates must pass a written comprehensive examination in music history, theory, and music education after 15 hours of study have been completed.

The graduate teacher certification program may be taken at the graduate level, alone or in conjunction with the Master of Music degree. It presumes that a candidate has completed the equivalent of the URI Bachelor of Music degree program with courses in music theory, form and analysis, music history, performance, and vocal and instrumental ensembles. Requirements include the MUS 169–179 Performance Classes; MUS 311 and 312 Conducting; MUS 416 Form or MUS 417 Instrumentation and Choral Arranging; MUS 238, 339, 340 Methods; PSY 113; EDC 250, 312, and 484 Student Teaching; MUS 480 Graduate Portfolio in Music (includes Student Teaching Seminar); and the piano proficiency examination. Advanced standing by examination in the above areas is possible. Certain 500-level music education courses may be used as substitutes with permission of the department.

Completion of the teacher certification program can require as many as 36 credits (or more, if remedial studies in music are needed) in addition to what is required for the M.M. degree alone.

### Master of Music

*Admission requirements:* undergraduate major, or the equivalent, in music with a grade point average of 2.50 or above. *M.M. in Music Performance.* *Voice or instrument option:* Audition or an audition tape. Deficiencies may be made up by study at the MUS 410 level. *Conducting option:* Audition or an audition tape. Deficiencies

may be made up by study at the MUS 311 or 312 levels. *Composition option:* A portfolio of original compositions. Deficiencies may be made up by study at the MUS 410V level. *M.M. in Music Education.* *Performance/essay option:* Audition or an audition tape. Deficiencies may be made up by study at the MUS 410 level. *Conducting option:* Evidence of baton technique must be demonstrated through an audition or videotape. *Composition option:* Scores and tapes of original compositions. Deficiencies may be made up by study at the MUS 410V level. *Thesis option:* Writing sample of a major paper from undergraduate work or the equivalent.

*Program requirements:* post-admission placement examinations in appropriate areas (music history, theory, composition, and/or music education) determine whether background deficiencies must be made up with no program credit. A minimum of 30 credits is required for graduation. One-half of the program credits must be at the 500 level. (Teacher certification requires additional courses in education at the undergraduate level.)

Students may also take up to six credits from the graduate offerings at Rhode Island College (in Providence). The available courses will be posted in the department each semester. These courses must be approved for program credit prior to registration and must be included in the six-credit maximum for transfer credit and the 12-credit maximum for advanced standing.

### Nursing

M.S., Ph.D.  
401-874-2766

*Faculty:* Associate Professor Joseph, *dean*; Professor Schwartz-Barcott, *director of graduate studies*. Professors Burbank, Dufault, Miller, Padula, Sullivan, and Yeaw; Associate Professors Coppa, Ferszt, and Vian; Assistant Professors Carley, Lauzon-Clabo, and O'Brien; Clinical Associate Professor Mercer; Clinical Assistant Professors Gerzevitz and Kamanda.

### Specializations

For the M.S.: administration, education, and advanced practice nursing (including a clinical nurse specialist concentration with an emphasis in psychiatric mental health or gerontology, a nurse practitioner concentration with emphasis on the family and gerontology, and a nurse-midwifery concentration).

For the Ph.D.: clinical nursing research in the domains of client, client-nurse interactions, and nursing practice.

### Master of Science

*Admission requirements:* MAT or GRE; a bachelor's degree from a CCNE or NLN-accredited program with an upper-division major in nursing and an undergraduate course in statistics. For specialization in primary health care, two years of professional nursing practice. Students are required to pass an elementary pathophysiology course with a grade of C or better prior to entering the program. There is a challenge exam established for those incoming students who have not taken a pathophysiology course within five years prior to enrolling in the nurse practitioner program. For specialization in nurse-midwifery, two years of professional nursing practice, preferably in maternal-infant health nursing, and completion of a course in expanded assessment skills in nursing, equivalent of NUR 503. Students who have not completed upper-division undergraduate nursing course work will be required to make up this deficiency prior to admission. Completed application package with professional letters of reference and a curriculum vita must be received by November 15 for spring admission and April 15 for summer and fall admission. Acceptance is based on a full review of the applicant's record and not on any one single component.

*Program requirements:* 41 credits for administration, education, and advanced practice nursing in the clinical nurse specialist concentrations; 42 credits for nurse practitioner concentration; 46 credits for nurse-midwifery concentration. Required courses include 14 credits in core courses

(NUR 500, 505, 507, 510, and 520) for all students; nine to 32 credits in the area of specialization (NUR 551, 552 for administration; NUR 538, 539, 541, 542 for education; NUR 511, 512, 515, 516, 517 for clinical nurse specialist concentration in psychiatric mental health; NUR 555, 556, 557, and 558 for clinical nurse specialist concentration in gerontology; NUR 503, 504, 531, 532, 533, 534, 535, 582, and 590 for nurse practitioner concentration in family; NUR 503, 508, 535, 561, 562, 563, 564, 582, and 590 for nurse practitioner concentration in gerontology; and NUR 535, 571, 572, 573, 574, 575, 576, 577, and 582 for nurse-midwifery concentration); 18 credits of restricted electives for administration, 12 credits for education and clinical nurse specialist concentrations; a major paper involving significant independent study; and a written comprehensive examination.

### Doctor of Philosophy

*Admission requirements:* GRE (scores at 60th percentile or above are desirable); a bachelor's degree in nursing from a CNNE or NLN-accredited program or its equivalent in nursing and a master's degree or its equivalent (cumulative averages of 3.00 and 3.30, respectively, desired); two scholarly papers (one theoretical and one empirical) or a master's thesis or equivalent; three professional recommendations for doctoral study, including one by a doctorally prepared person; a statement of purpose indicating goals congruent with those of the program and institution; a curriculum vita; and a course in statistics, including inferential statistics. Acceptance is based on a full review of the applicant's record and not on any one single component.

*Program requirements:* a minimum of 43 credits of course work, including core courses in nursing (19 credits) and cognates (six credits); electives in nursing (nine credits) and in research methods (six credits); free electives (three credits); and 18 credits of doctoral dissertation research, plus written and oral comprehensive examinations in nursing theory, research methods, and one substantive area.

### Nutrition and Food Sciences

M.S., Ph.D. (Biological Sciences)  
Dietetic Internship Certificate Program  
401-874-2253/2467

*Faculty:* Professor English, *chairperson*; Professor Greene, *director of graduate studies*. Professors Fey-Yensan and Lee; Associate Professor Gerber; Assistant Professor Melanson; Adjunct Professor Sebelia; Adjunct Associate Professor Pivarnik; Professors Emeriti Caldwell, Constantinides, and Rand.

### Food Science

URI's food science graduate program is an interdepartmental program. Admission is based on academic merit, ability to do research, and the match of research interests between the applicant and faculty in the areas of specialization listed: marine food product and process development, physical properties, and rheology; fish mince and surimi technology; bioconversion technology; seafood flavor, food safety and quality assessment.

### Master of Science

*Admission requirements:* GRE and bachelor's degree in food science or closely related field. Candidates lacking adequate courses in biological sciences, general chemistry, organic chemistry, biochemistry, physics, statistics, and calculus may be required to make up deficiencies without graduate credit.

*Program requirements:* thesis; two credits of NFS 511; a minimum of three credits in biochemistry, chemistry, or microbiology; NFS 431, 432, 435, and 502; STA 409, 412 or equivalent. Additional course work will be selected as appropriate for the student's area of specialization in consultation with, and approval of, the major professor. All resident students are required to be continuously registered in NFS 511 or 512, but no more than two credits of NFS 511 can be used for program credit.

### Doctor of Philosophy (Biological Sciences)

*Admission requirements:* GRE and master's degree in food science or related physical or biological science. Either the undergraduate or M.S. degree must be in food science.

*Program requirements:* dissertation; BCH 521, 542, 581, or CHE 574; same as master's degree plus BCH 581 and either BCH 521 or 542; a total of three credits in NFS 511, STA 532, or equivalent, and a research problem (NFS 691, 692) under the supervision of an advisor other than the major professor. All resident students are expected to be continuously registered in NFS 511 or 512, but no more than three credits of NFS 511 can be used for program credit.

### Nutrition

*Specializations:* nutritional status and food behavior of high risk population groups; dietary behavior change to reduce chronic disease risk; nutrition issues related to aging and weight management; diet and exercise; energy and macronutrient metabolism; metabolic regulation and energy balance.

### Master of Science

*Admission requirements:* GRE and bachelor's degree. All applicants must have completed a minimum of two semesters of chemistry, and one each of biochemistry, anatomy or biology, human physiology, nutrition, and statistics. Students from other academic areas are encouraged to apply but must have physiology, biochemistry, nutrition, and statistics prior to admission.

*Program requirements:* There is a thesis option and a nonthesis option. The thesis option is designed for students who plan to pursue research-based careers in nutrition and/or advanced training in nutrition. The nonthesis option is designed for practitioners who do not intend to pursue a career in research; it provides career training that will be valuable for professional development.

**Thesis option (30 credits):** Thesis (6 credits), two credits of NFS 511; a minimum of three credits in biochemistry, chemistry, microbiology, or physiology; NFS 505, 551, and 552; three credits in statistics. All resident students are required to be continuously registered in NFS 511 or 512, but no more than two credits of NFS 511 can be used for program credit. Applicants without undergraduate training in nutrition may be required to make up background courses without graduate credit.

**Nonthesis option (35 credits):** experiential learning (NFS 580 [6 credits]); independent study leading to the production and evaluation of a product (NFS 591/592 [6 credits]); NFS 505, 506, 551, and 552; two credits of NFS 511/512; a 400- or 500-level science course; three credits in graduate-level statistics; three credits of electives; successful completion of a written examination. Applicants without undergraduate training in nutrition may be required to make up background courses without graduate credit.

### Doctor of Philosophy (Biological Sciences)

**Admission requirements:** GRE and master's degree in nutrition. Students from other academic areas are encouraged to apply, but must meet entrance requirements for the M.S. program.

**Program requirements:** dissertation, two 500- or 600-level courses in statistics/experimental design; a total of three credits in NFS 511, and a research problem (NFS 691/692) under the supervision of an advisor other than the major professor. Students who have not taken the courses required for the M.S. must do so as part of the Ph.D. program. All resident students are expected to be continuously registered in NFS 511 or 512, but no more than three credits of NFS 511 can be used for program credit.

### Dietetic Internship Certificate Program

**Admission requirements:** students wishing to complete URI's Dietetic Internship Certificate Program (DICP) must be admitted to a

graduate degree program at URI. Students may either be admitted to a degree program prior to application to the DICP or may apply to the Department of Nutrition and Food Sciences master's degree program with the internship option. Applicants must have an earned bachelor's degree with completion of the American Dietetic Association (ADA) Didactic Program in Dietetics (DPD) requirements. Applicants must submit an ADA verification form or declaration of intent form signed by their DPD director. In addition, applicants must submit two official transcripts of all academic work, an internship application form, three letters of recommendation using internship recommendation forms, and a personal statement of objectives. Admission is highly competitive and for the fall term only. Final selection of qualified applicants is determined by the national computer matching process. Criteria used for admission include academic achievement, relevant work experience, personal statement of objectives, and recommendation letters. Enrollment is expected to be limited to eight students. Program information, application forms, and application deadlines can be obtained by calling 401-874-2253.

**Program requirements:** the DICP is an ADA-accredited internship administered by the Department of Nutrition and Food Sciences. The DICP is accredited by the Commission on Accreditation for Dietetics Education of the ADA, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606, 312-899-0040, ext. 5400. DICP students are governed by the same academic standards as other graduate students. The program consists of nine courses including more than 1,200 hours of supervised practice experience in health care facilities. Students satisfactorily completing the program will receive a certificate qualifying them to take the Dietetic Registration Examination as well as to apply for licensure to practice dietetics in Rhode Island.

## Ocean Engineering

M.S., Ph.D.  
401-874-6139

**Faculty:** Professor Grilli, *chairperson*; Associate Professor Baxter. Professors Hu, Miller, Moran, Spaulding, Stepanishen, and Tyce; Associate Professor Baxter; Assistant Professor Roman; Assistant Research Professors Grilli and Potty; Adjunct Professors Corriveau, Muench, and Shonting; Adjunct Associate Professor Vincent; Adjunct Assistant Professors Cousins and Newman; Professors Emeriti Kowalski, Middleton, Silva, and Sheets.

### Specializations

Ocean instrumentation and seafloor mapping, underwater acoustics and data analysis, marine hydrodynamics and water-wave mechanics, coastal and nearshore processes, marine geomechanics, coastal and offshore structures, and ocean systems.

### General Information and Financial Aid

Programs of study can be designed for individuals employed full-time. Graduate and research assistantships are available for highly qualified students; some industrial and other fellowships are also available.

### Master of Science

**Admission requirements:** B.S. degree in engineering, physics, applied mathematics, or other technical disciplines. Students with a non-engineering background may be required to take undergraduate courses in thermodynamics, fluid mechanics, strength of materials, electrical circuits, and applied mathematics.

**Program requirements:** the thesis option requires 30 credits with a minimum of 12 credits of course work in ocean engineering and nine credits for thesis research. The nonthesis option requires permission of the chairperson and a total of 30 credits with a minimum of 18 credits of course work in ocean engineering, with one course requiring a paper involving significant

independent study and a written comprehensive examination. OCE 605 and 606 are required of all full-time students.

### Doctor of Philosophy

*Admission requirements:* M.S. degree in engineering or equivalent; exceptional students with a Bachelor of Science in engineering will also be considered. All students will be required to complete courses equivalent to those for the M.S. degree in ocean engineering if not included in their master's degree.

*Program requirements:* a total of 42 credits beyond the M.S. degree (or 72 credits beyond the B.S. degree), composed of at least 18 credits of course work and 24 credits of dissertation research. Courses must include one in advanced applied mathematics, one in engineering or oceanography, and a minimum of two in ocean engineering. Qualifying, written, and oral comprehensive examinations are required for all doctoral students. OCE 605 and 606 are required for all full-time students.

## Oceanography

M.O., M.S., Ph.D.  
401-874-6246

*Faculty:* Professor Farmer, *dean*; Professor Smith, *associate dean*. Professors Ballard, Carey, Collie, Cornillon, D'Hondt, Durbin, Ginis, Hara, Hargraves, Hebert, Heikes, Kincaid, King, Larson, Leinen, Lohmann, Mather, Merrill, Miller, Moran, Nixon, Oviatt, Rossby, Rothstein, Sigurdsson, Smayda, Specker, Spivack, Watts, Wimbush, Wishner, and Yoder; Associate Professors Moran, Shen, and D. Smith; Assistant Professors Donohue, Jenkins, Kelley, McNeil, Robinson, and Rynearson; Professors in Residence Buckley, Donaghay, Gifford, Hanson, Kenney, Rines, Roman, Sheremet, Sullivan-Watts, and Sutyrin; Professors Emeriti Jeffries, Knauss, Pilson, Quinn, Quinn, Saila, Schilling, Sieburth, and Swift; Associate Professor Emeritus Napora.

### Specializations

Biological, chemical, geological, and physical oceanography. Also archaeological oceanography (see below).

### Financial Support

A variety of assistantships are available for M.S. and Ph.D. candidates.

### Master of Oceanography

*Admission requirements:* GRE (aptitude required) and bachelor's degree in natural sciences or engineering. Most international students at GSO have a paper TOEFL score above 600 or a computer TOEFL score above 250, corresponding to 100 on the new Internet-based test (iBT). The University minimum must be met on each of the four sections of the TOEFL; see page 115. Most applicants are admitted for the fall semester, but admission for the start of the spring semester is possible. Up to 20 students are admitted to the program each academic year. No application will be considered that shows an undergraduate average of less than B unless there is post baccalaureate work indicating outstanding ability. To ensure full consideration for admission, the complete application packet should be received by February 1.

*Program requirements (total of 30 credits):* written comprehensive examination; OCG 695 (two credits); major paper (three credits); OCG 501, 521, 540, 561; six credits in oceanography or other science departments; three credits in policy, management, economics, or a related field; three credits in statistics, data analysis, or scientific writing.

### Master of Science

*Admission requirements:* GRE (aptitude required, advanced in the applicant's undergraduate major recommended) and bachelor's degree in natural sciences, engineering, or mathematics. Most international students at GSO have a paper TOEFL score above 600 or a computer TOEFL score above 250, corresponding to 100 on the new Internet-based test (iBT). The University minimum must be met on each of the four sections of the TOEFL; see page 115. Most applicants are admitted for the fall semester, but admission for the start of the spring semester is possible. Due to the limited number of students who can be accepted as degree candidates, no application will be considered that shows an undergraduate average of less than B unless there is postbaccalaureate work indicating outstanding ability. To ensure full consideration for admission and financial support, the completed application packet should be received by February 1.

must be met on each of the four sections of the TOEFL; see page 115. Most applicants are admitted for the fall semester, but admission for the start of the spring semester is possible. Due to the limited number of students who can be accepted as degree candidates, no application will be considered that shows an undergraduate average of less than B unless there is postbaccalaureate work indicating outstanding ability. To ensure full consideration for admission and financial support, the completed application packet should be received by February 1.

*Program requirements:* thesis, OCG 695, and participation in a regular ocean research cruise. For specialization in biological or chemical oceanography, OCG 501, 521, 540, and 561; for specialization in geological oceanography, six credits of 500- and 600-level OCG courses outside the geological oceanography discipline (not including OCG 695); for specialization in physical oceanography, OCG 501, 510, and any two of OCG 605, 610, and 613.

### Doctor of Philosophy

*Admission requirements:* GRE (aptitude required, advanced in the applicant's undergraduate major recommended); and bachelor's degree in natural sciences, engineering, or mathematics. Most international students at GSO have a paper TOEFL score above 600 or a computer TOEFL score above 250, corresponding to 100 on the new Internet-based test (iBT). The University minimum must be met on each of the four sections of the TOEFL; see page 115. Most applicants are admitted for the fall semester, but admission for the start of the spring semester is possible. Due to the limited number of students who can be accepted as degree candidates, no application will be considered that shows an undergraduate average of less than B unless there is postbaccalaureate work indicating outstanding ability. To ensure full consideration for admission and financial support, the completed application packet should be received by February 1.

**Program requirements:** comprehensive examination, dissertation, OCG 695, participation in a regular ocean research cruise, six credits of 600-level OCG courses (excluding problems and research courses and OCG 695). For specialization in biological or chemical oceanography, OCG 501, 521, 540, and 561; for specialization in geological oceanography, OCG 540 and any two of OCG 501, 521, and 561; for specialization in physical oceanography, OCG 501, 510, 605, and 613 and any six credits of 500- and 600-level OCG courses outside the physical oceanography discipline. A Ph.D. qualifying examination is required of all doctoral students. This requirement is satisfied by completing, with a grade of B or better, the courses specified for the appropriate discipline.

### Archaeological Oceanography Program

An archaeological oceanography program is also offered. Students in this program are simultaneously enrolled for the oceanography Doctor of Philosophy degree and the history (anthropology and archaeology option) Master of Arts degree. A twelve-credit reduction (six in each degree) is allowed for students in the program.

### Oceanography/Marine Affairs Ph.D./M.M.A. Joint Degree Program

The Graduate School of Oceanography and the Department of Marine Affairs of the College of the Environment and Life Sciences are offering a joint degree program in which students simultaneously take an oceanography Ph.D. and a Master of Marine Affairs (M.M.A.) degree. The program in marine affairs focuses on ocean/coastal management, policy, and law, and the joint degree program will prepare scientists with policy knowledge and skills needed in many contemporary professional positions, both inside and outside of government. At the discretion of the cognizant major professor, up to six credits from each degree may be counted toward the degree requirements of the other, thus reducing the total requirements by up to 12

credits (to  $66 + 24 = 90$ ). Students wishing to enroll in the joint degree program must apply to be admitted to both the M.M.A. and the GSO Ph.D. programs. To ensure adequate marine experience, a student in the program may not be nominated for the M.M.A. degree until the comprehensive examinations in the oceanography doctoral program are successfully completed.

## Pharmaceutical Sciences

M.S., Ph.D. (Pharmaceutical Sciences)  
401-874-2789

### Faculty

*Medicinal Chemistry and Pharmacognosy:* Professors Cho and Shimizu; Assistant Professors King, Parang, and Rowley.

*Pharmaceutics and Pharmacokinetics:* Professors Kislalioglu, Lausier, Needham, Rosenbaum, and Zia; Assistant Professors Akhlaghi.

*Pharmacoepidemiology and Pharmacoconomics:* Professors Larrat, Rosenbaum, and Temkin; Assistant Professors Kogut and Quilliam; Clinical Assistant Professors Kerry, Laplante, Marcoux, and Ward.

*Pharmacology and Toxicology:* Professor Chichester, chairperson; Professors Rodgers, Shaikh, Swonger, and Yan; Associate Professors Babson and Zawia; Assistant Professors Deng, King, and Parang.

### Specializations

*Medicinal Chemistry and Pharmacognosy:* Molecular mechanisms of chemical carcinogenesis; mutation and repair; combinatorial chemistry; solid-phase peptide synthesis; screening, isolation, and structure elucidation of physiologically-active natural products; biosynthesis of microbial and plant natural products; herbal medicine.

*Pharmaceutics and Pharmacokinetics:* Design, development, production, evaluation, and regulatory approval of pharmaceutical and self-care products as well as pharmacokinetic and pharmacodynamic studies using virtual, clinical, and preclinical

data, often with an emphasis on population approaches.

*Pharmacoepidemiology and Pharmaco-economics:* Health and economic outcomes research pertaining to pharmacotherapy as used in human populations. Specializations include medication adherence, decision and cost-effectiveness analyses, post-marketing surveillance, epidemiologic methods, and quality improvement and measurement.

*Pharmacology and Toxicology:* Mechanisms involved in various disease states and their pharmacological intervention, and mechanisms of toxicity of various environmental agents. Ongoing topics include the effects of hormonal imbalances and antihypertensive agents on cardiac function and metabolism in hypertension, biomarkers and treatment of arthritis, effect of septic shock on drug metabolism, developmental neurotoxicity of environmental agents, hepatotoxicity and nephrotoxicity of heavy metals, pharmacogenetics, calcium- and non-calcium-mediated pathways of cell death, drug metabolism and drug transport, and the development of inhibitors to cell signaling events.

### Master of Science

*Admission requirements:* GRE and Pharm.D. or bachelor's degree in pharmacy, chemistry, biological sciences, or allied sciences; TOEFL (waived for applicants from countries where English is the primary language).

*Program requirements:* Successful completion of 30 credits of graduate study, including PHC 502, 2 seminar credits, 6-9 thesis research credits, thesis.

For specialization in medicinal chemistry and pharmacognosy: ACS placement exam (organic) to determine specific program requirements; either BPS 530 or BPS 535; nine credits selected from CHM 427, CHM 521, CHM 522, BCH 581, BPS 525 and 551, and BPS 691A in consultation with student's major professor.

For specialization in pharmaceutics and pharmacokinetics: STA 409 or 411 or equivalent; 6-9 credits of 500- or 600-level BPS courses; 3-6 credits of elective in consultation with student's major professor.

For specialization in pharmacoepidemiology and pharmacoeconomics: PHP 540, 550, and 580, in consultation with student's major professor.

For specialization in pharmacology and toxicology: BCH 581; one course of either BPS 530, 535, or 587; and three courses from BPS 525, 544, 546, 572, 587, 641, 644, and BCH 582, in consultation with student's major professor.

### Doctor of Philosophy

*Admission requirements:* GRE and master's degree in pharmacy, chemistry, biological sciences, or allied sciences, or bachelor's degree in one of these areas with evidence of superior ability. Qualifying examination is required for candidates accepted without the master's degree. Qualified students may be admitted directly to the Ph.D. program.

*Program requirements:* Successful completion of 72 credits of graduate study, including up to 24 research credits, PHC 502, written and oral comprehensive examination, dissertation. Students are expected to attend and participate in the departmental seminars during their entire tenure in the Ph.D. program, for a maximum of three credits assigned to the core credit requirement.

For specialization in medicinal chemistry and pharmacognosy: ACS placement exam (organic) to determine specific program requirements; courses required for master's degree, plus one additional credit from BPS 523 or 524, in consultation with student's major professor.

For specialization in pharmaceuticals and pharmacokinetics: M.S. core requirements, plus one additional credit from BPS 523 or 524, 12 credits of 500- or 600-level BPS or PHP courses, and 12 credits of concentration courses. Suggested courses include analytical chemistry, immunology, human genetics, and statistics of clinical trials, microbiology, and BPS 525, in consultation with student's major professor.

For specialization in pharmacoepidemiology and pharmacoeconomics: courses required for master's degree plus one additional credit from PHP 693 or 694, and nine credits of concentration courses. Suggested

concentrations include health services research, outcomes research, decision analysis, medication adherence, epidemiologic methods, and others. Tutorials may be arranged in areas of special interest to the student, in consultation with student's major professor.

For specialization in pharmacology and toxicology: courses required for master's degree plus one additional credit from BPS 523 or 524; BPS 530, 535; two additional graduate-level courses from BPS or BCH 582, in consultation with student's major professor.

### Joint Doctor of Pharmacy/Master of Business Administration Program

The University of Rhode Island Colleges of Pharmacy and Business Administration offer a joint program that allows students the opportunity to develop management and administrative skills as they study for the Doctor of Pharmacy (Pharm.D.) degree. This program qualifies individuals to assume leadership and management roles in the health care industry. A unique combination of management and pharmacy coursework, coupled with innovative practicum experiences, provides students with a knowledge base of theoretical and applied information.

The joint program requires the student to complete a total of 224 credits.

Students enrolled in the Doctor of Pharmacy program are eligible to apply for admission to the joint program after their second professional year (by July 15). The following are required at that time: GMAT, statement of purpose, résumé, two letters of recommendation, and TOEFL (waived for applicants from countries where English is the primary language).

### Joint Doctor of Pharmacy/Master of Science Degree Program

The University of Rhode Island College of Pharmacy offers a joint program that allows students the opportunity to pursue the Master of Science degree while studying for the Doctor of Pharmacy degree. Students may elect to study in any one of the four specialization areas described in the graduate program: medicinal chemistry

and pharmacognosy, pharmaceuticals and pharmacokinetics, pharmacoepidemiology and pharmacoeconomics, or pharmacology and toxicology.

This program is designed for highly qualified and motivated students who are interested in simultaneously pursuing the Pharm.D. and M.S. degrees. Students are expected to complete the Pharm.D. program as described in this catalog. In addition, students must complete all additional credits required for the M.S. degree, complete a research project, and write and defend a thesis. It is expected that the motivated student will be enrolled during the summer sessions after the fourth, fifth, and sixth years with the objective of completing both degrees at the same time or in one additional semester.

Students enrolled in the Doctor of Pharmacy program are eligible to apply for admission to this joint degree program in the second semester of their first professional year (by May 1). The following are required at that time: GRE score, statement of purpose, résumé, and two letters of recommendation.

## Physical Therapy

D.P.T.  
401-874-5001

*Faculty:* Professor Marcoux, *chair*. Professors Rowinski and Roush; Associate Professors Agostinucci and Blanpied; Clinical Assistant Professors Audette, Dupre, Hulme, McLinden, Ruggieri-Jones, and VanCougheghen.

URI's physical therapy program is an entry-level Doctor of Physical Therapy program that prepares students for the state professional licensure examination. There is an emphasis on the development of clinical skill and research capability through the three-year graduate study plan.

The physical therapy program is located in the Independence Square II facility and has a clinical service and research unit that includes a computerized anatomical study center, BIODEX and KINCOM muscle per-

formance dynamometry, postural analysis, electromyography, Gait Rite computerized gait analysis system, and kinetic and kinematic analysis systems. SwimEx and Aqua Arc aquatic therapy devices are available for therapeutic and research activities. Research is currently conducted in the treatment and prevention of spine problems, muscular stiffness, neuromuscular control mechanisms, patient satisfaction, and quality of life.

### Specializations

Research activities are focused on biomechanics, neuromuscular control, muscle performance, neuromuscular rehabilitation, disability, and patient satisfaction. Clinical speciality skills are enhanced through faculty clinical practice and regional internships.

### Doctor of Physical Therapy

*Admission requirements:* GRE (aptitude test scores at the 50th percentile or above are desired) and a bachelor's degree with 12 credits of biological sciences (including a minimum of eight credits of human anatomy and human physiology courses, which must include a lab); physical sciences (16 credits, eight in chemistry and eight in physics, both of which must include a lab); six credits of social sciences (including general and developmental psychology); three credits in mathematics (precalculus or higher); three credits in communications (preferably writing or speech). An introductory statistics course is required, preferably through ANOVA. At URI, this means PSY 300 or STA 308. Courses in abnormal psychology, computer science, exercise physiology, and research design are strongly recommended but not required.

A clinical experience with a physical therapist is required. The experience should include observing and aiding a physical therapist in treatment or evaluation procedures. The minimum number of hours recommended for the clinical experience is 30–40 hours of voluntary or paid time. Most successful applicants demonstrate a diversity of clinical experi-

ence and a number of hours exceeding the minimum required in a physical therapy setting. The experience may be part of field work study for credit in a health-related discipline. Evidence of such experience should be documented by a recommendation from the physical therapist addressing the nature and duration of the experience, which should be submitted as part of the application process. Special recommendation forms and a form for the listing of completed prerequisites are available online through the Physical Therapy Department Web site at [ptp.uri.edu](http://ptp.uri.edu). Baccalaureate requirements must be completed prior to final acceptance into the D.P.T. program. The completed application package must be received by the second Friday in January. While applications will be reviewed as early as December 15, applicants will be admitted for the fall semester only.

*Program requirements:* a minimum of 109 credits of specified physical therapy course work, including 15 credits of internship. This program is a three-year plan of required course work, with the first two semesters at the 500 and 600 levels (42 credits), followed by four semesters and a summer session of graduate-level course work, including an internship at an affiliated institution between the second and third years. As for all internships, the student may have to pay travel and living expenses for summer internships. Internships and clinical course work of the first year also require a criminal background check and immunization for the hepatitis B virus and instruction in HIV precautions, as required by OSHA standards. Both are at the student's expense.

Though this is essentially a nonthesis program, a substantial paper involving significant independent research is required. A course in statistical methods is required prior to entry into the program. All courses involving clinical skill development require skill competency testing via practical examination. All clinical competencies determined necessary by the faculty of the respective course must be demonstrated as adequately learned by the student in these courses

for achievement of an adequate scholastic course grade. (See "Scholastic Standing," pages 120–121.) A comprehensive examination is also required. In addition to academic requirements, all students must meet the requirements of generic abilities described in the PT Student Handbook.

### Physics

M.S., Ph.D.  
401-874-2633

*Faculty:* Professor Northby, *chairperson*. Professors Heskett, Kahn, Kaufman, Malik, Meyerovich, Muller, Nightingale, Nunes, and Steyerl; Assistant Professors Reshetnyak and Yoon; Adjunct Professor McCorkle; Adjunct Associate Professors Bozyan, Karbach, and Ruffa; Adjunct Assistant Professor Briere; Professors Emeriti Desjardins, Hartt, Letcher, and Pickart.

### Specializations

*Acoustics and optics:* underwater acoustics, optical and piezo-electric biosensors.

*Astronomy:* astrometry, low-frequency radio sources and optical counterparts.

*Computational physics:* classical and quantum Monte Carlo methods, large-scale parallel computations, optimization, many-body interactions and invariants, finite-size scaling, recursion method.

*Experimental condensed matter physics:* electronic and structural properties of surfaces and thin films studied via low-energy electron diffraction, Auger electron spectroscopy, X-ray standing wave and photoemission techniques (in-house and at the Brookhaven National Laboratory synchrotron facility); surfaces and interfaces in thin films and multilayers studied via X-ray and neutron reflection and diffraction (in-house and at the National Institute of Standards and Technology reactor facility); epitaxial growth, magnetism in nanoparticles and on surfaces via neutron and X-ray scattering; characterization of electromigration by electrical and optical techniques, Rutherford backscattering, and scanning tunneling microscopy.

*Experimental low-temperature physics:* atomic cluster beams, quantum liquids.

*Experimental neutron physics:* ultracold neutrons used to study beta-decay, neutron optics (at the Institut Laue-Langevin, Grenoble).

*Nonlinear dynamics and chaos:* turbulence, Hamiltonian chaos, integrability in quantum mechanics.

*Theoretical condensed matter physics:* surface physics, phase transitions and critical phenomena, critical dynamics, superconductivity, quantum transport, nano-scale films and clusters, disordered systems, low-dimensional systems, spin dynamics, Bethe ansatz.

*Theoretical low-temperature physics:* Fermi and Bose quantum liquids, solids and gases; spin-polarized quantum systems.

### Master of Science

*Admission requirements:* GRE and advanced test recommended; bachelor's degree with major in physics preferred.

*Program requirements:* PHY 510, 520, 525, 530, 560, 570, and 580 are required of all students. For both the thesis and the nonthesis options, the student will complete 30 credits, of which no more than six may be below the 500 level. For the nonthesis option, at least one course will require a substantial paper involving significant independent study, and the student must pass a final written and oral examination.

### Doctor of Philosophy

*Admission requirements:* GRE and advanced test recommended; bachelor's degree with major in physics preferred. Master's degree is not required.

*Program requirements:* PHY 510, 520, 525, 530, 570, 580, 610, 625 (or 626), 630, 670, and 680. There is no formal departmental language requirement, although the candidate's committee may require demonstration of language proficiency. Successful completion of a qualifying examination is required of all students. *This examination is normally expected to be taken in the second year of studies.*

## Political Science

M.A., M.P.A., M.P.A./M.L.I.S.  
401-874-2183; 401-277-5200

*Faculty:* Professor Moakley, *chairperson*. Professors Hamilton, Hennessey, Killilea, Petro, Rothstein, Stein, Tyler, and Zucker; Adjunct Professors Leazes and Profughi.

### Specializations

International relations, comparative politics, American politics, public policy, and public administration.

### Master of Arts

*Admission requirements:* generally, GRE, GMAT, or MAT, and undergraduate credit in basic political science and political theory.

*Program requirements:* a minimum of 30 credits, including PSC 553 and either 580 or 583 for both thesis and nonthesis options, depending on area of specialization; nonthesis option requires one course including a substantial paper requiring significant independent research and an oral examination in addition to the comprehensive examination.

### Master of Public Administration (M.P.A.)

The Rhode Island Master of Public Administration Program (RIMPA) leads to the M.P.A. degree conferred by the University of Rhode Island. It is a collaborative undertaking, governed and offered by a committee of University faculty that includes adjunct faculty from Rhode Island College. The RIMPA is offered at URI's Providence campus and provides federal, state, city, and nonprofit officials and agencies easy access to its instructional programs and research expertise. In addition to delivering its degree and certificate programs, internships, and workshops, the RIMPA faculty conducts research into the formation and implementation of public policy and the administration of public and nonprofit agencies. Current research areas include public professional ethics, the training of public managers, water resource management, the governance and financing of

nonprofits, state prison administration, the public administration of technology, industrial policy at the state and national levels, and case management in mental health agencies.

*Admission requirements:* generally, based on the applicant's undergraduate academic record, current scores for one of the following exams: GRE, MAT, GMAT. Exam requirement waived for applicants holding an advanced degree from an accredited institution of higher education.

*Program requirements:* This is a nonthesis program. Requirements include one course with a substantial paper and significant independent research; comprehensive examination; internship (may be waived); minimum total of 36 credits including PSC 501, 503, 504, 505, 506, 524, and 573. Competency in computer science and statistics is required and may be demonstrated by completion of a basic course at the undergraduate level. Competence in basic computing skills may be demonstrated by completion of a basic course at the undergraduate level, or, after review by the M.P.A. program director, by professional, worksite training completed by the candidate, or by virtue of the professional responsibilities of an M.P.A. candidate.

Students in the RIMPA program taking elective courses at the participating institutions will be governed by the same regulations effective for courses taken at URI. Under this rule, grades (including failures) for all graduate courses taken at a participating institution will be included in the grade point average and will become part of the student's record.

### M.P.A. and M.L.I.S. Cooperative Program

A cooperative program permits joint enrollment in URI's Master of Public Administration and Master of Library and Information Studies programs. The integrated pursuit of the two degrees makes it possible for nine credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of such course work to be applied in

the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 63 credits.

**Admission requirements:** GRE and other requirements listed for M.P.A. and M.L.I.S. Applicant must apply and be accepted in both programs. Applications to both programs must indicate M.P.A./M.L.I.S. as the field of specialization.

**Program requirements:** each student must complete the required core courses for both programs plus three credits of PSC 590 for the M.P.A. After consultation with, and approval of, both departments, students must file separate programs of study for each degree, indicating the courses to be jointly counted. Each student must pass the separate comprehensive examination for each degree. A student who fails to complete one of the programs may, of course, complete the other in accordance with the separate program of study.

## Psychology

M.S., Ph.D.  
401-874-2193

**Faculty:** Professor Stevenson, *chairperson*. Professors Berman, Biller, Brady, J.L. Cohen, Collyer, de Mesquita, Faust, Florin, Gorman, Harlow, LaForge, Morokoff, Prochaska, Quina, Rossi, Velicer, Willis, and Wood; Associate Professors Boatright-Horowitz, S. Harris, Park, and Rogers; Assistant Professors Flannery-Schroeder, Robbins, Stern, Walls, and Weyandt; Adjunct Professors Abrams, Celebucki, Colby, Lester, Lipsitt, Redding, and Wiener; Adjunct Associate Professors Bernton, Fava, Gallagher, Garrido, Haspel, Hurley, Monti, Seifer, and Varna-Garis; Adjunct Assistant Professors Aloia, Arruda, J. Brown, Cady-Webster, Erickson, Evers, Frenzel, J. Johnson, S. Johnson, Kenna, Little, Schneider, and Silver; Professors Emeriti Grebstein, Gross, A. Lott, B. Lott, Merenda, Silverstein, N. Smith, Valentino, Vosburgh, and Willoughby.

## Specializations

Programs are offered in clinical, behavioral science, and school psychology. Specializations are offered within each program. The clinical program encourages students to develop a focus in one of the following areas: health psychology, children and families, community psychology, diversity and multicultural issues, neuropsychology, and applied methodology. Students in the school psychology program focus their interests in one or more of the roles and functions of school psychologists emphasized in the program such as assessment, intervention, consultation, prevention, reading and literacy, decision making, early intervention and school readiness, cross-cultural development, and multicultural competence. Students in the behavioral science program tailor their own program but tend to emphasize one or more of the following areas: research methodology, gender/multicultural issues, health/prevention, and child/family/community. Additional individual specialties can be developed within each of the program areas. For more information, go to [uri.edu/artsci/psy](http://uri.edu/artsci/psy).

## Master of Science (School Psychology Only)

**Admission requirements:** GRE (verbal and quantitative), advanced test recommended. Undergraduate major in psychology recommended. Applicants are admitted for the fall semester only. The completed application package must be postmarked by January 15.

**Program requirements:** Nonthesis: internship; total of 60 credits with a minimum of 30 for the master's degree plus additional credits for certification as a school psychologist; one course with a major paper involving significant independent research; and a written comprehensive examination.

This program is recognized by NASP as a 60-credit "specialist-level" program, is accredited by NCATE/NASP, and meets the requirements for certification in Rhode Island.

## Doctor of Philosophy (Clinical, Behavioral Science, and School Psychology)

**Admission requirements:** GRE (verbal and quantitative), advanced test recommended; evidence of research competency; personal statement addressing research and clinical experience and interests; curriculum vitae. Applicants are admitted for the fall semester only. The completed application and all supporting materials must be postmarked or electronically submitted by December 15 for clinical, January 15 for school, and January 20 for behavioral science. See program Web sites for details. Prospective applicants are asked to address initial inquiries concerning the desired specialization to the department. The formal application materials can be obtained from the Graduate School Web site, and the completed application package must be submitted online or sent to the department. Applicants to the clinical and school programs are evaluated on the basis of previous academic achievement, GRE scores, previous life experience, previous applied clinical and research experience, letters of recommendation (three required), personal interview, and match between applicant and program needs. For more information, go to [uri.edu/artsci/psy](http://uri.edu/artsci/psy).

Due to limited facilities, new admissions to the doctoral programs are limited to a small number per year. Finalists in the school and clinical specializations must participate in a personal interview to complete the evaluation process. Although test scores and cumulative averages are not the sole criteria for admission to the clinical program, those with overall grade point averages of less than 3.00 (on a 4.00 scale) are advised that there is little chance for admission.

**Program requirements:** Completion of a minimum of 90 credits (66 course work, 6 thesis, 18 dissertation). Students entering with an approved master's degree can transfer 30 credits. Research course requirements: a minimum of two courses in statistics (STA/PSY 532, PSY 533) and

a research methods course (PSY 611). In addition, all students must complete a multicultural competency requirement, and four courses from among those numbered 600–609. Each of the three program areas (i.e., clinical, behavioral science, and school) also include specific research, content, and application requirements that are specified on their individual Web pages. The research competency requirement may be met by successfully defending a master's thesis or by successfully completing a research competency project under the direction of the major professor. The research competency project option is limited to those who have nonthesis master's degrees in psychology. Students who successfully complete the thesis option will earn a Master of Arts degree in psychology. A Ph.D. qualifying examination is required of all doctoral students entering without the master's degree. This requirement is met by completing, with a grade of B or better, four courses from STA/PSY 532, PSY 533, 611, and those numbered 600–609. These courses are usually completed prior to earning 24–30 credits. For students in the applied areas (clinical and school), course work must be completed in each of the following content areas of psychology: biological bases of behavior; cognitive and affective bases; social bases; individual differences; and history and systems of psychology. Students in the clinical program are required to take a course in ethics.

Both the clinical and the school psychology programs are accredited by the American Psychological Association. (Committee on Accreditation, American Psychological Association, 750 First Street NE, Washington, D.C. 20002-4242; phone 202-336-5979). Both programs subscribe to the scientist-practitioner model, and thus course requirements are consistent with maintaining such accreditation. These requirements generally include courses in foundations of psychological science, professional practices, research, and completion of an approved supervised internship. Practicum and individual research projects

can be specifically tailored to help the student prepare for the professional role of his or her choice. These programs also have a strong experiential base, including field activity in each year. Students are expected to be involved in research for a substantial portion of their program.

The department emphasizes a close working relationship between faculty and students. No single theoretical or philosophical model is espoused.

## Spanish

M.A.  
401-874-5911

*Faculty:* Professor Morello, *chairperson*; Professor White, *director of graduate studies*. Professors Gitlitz, Manteiga, Morin, and Trubiano; Associate Professor de los Heros; Assistant Professor Echevarria.

### Specializations

The Master of Arts in Spanish helps students advance to a professional level in the general area of Hispanic studies, including Spanish language mastery, and an understanding of Hispanic linguistics and literature as an expression of civilization and culture. The curriculum includes linguistics as well as the literary production of Spain, Spanish America, and the Spanish-speaking peoples of the United States, any of which could provide a field for specialization.

### Master of Arts

*Admission requirements:* undergraduate major in Spanish or equivalent, including 12 credits in Spanish or Hispanic-American literature, linguistics, and/or pedagogy. Promising applicants with fewer than 12 credits in these areas may be asked to make them up without graduate credit.

*Program requirements (30 credits):* Students electing the thesis option may include six thesis research credits. All course work must be carried out in Spanish unless otherwise approved by the Spanish Section.

Course work in URI-approved graduate study abroad programs will be counted toward the degree. Candidates must pass a comprehensive examination with both a written and an oral component.

## Speech-Language Pathology

M.S.  
401-874-5969

*Faculty:* Professor Singer, *chairperson*. Associate Professors Kovarsky and Weiss; Assistant Professors Kim and Mahler.

The speech-language pathology program is accredited by the American Speech-Language-Hearing Association.

### Master of Science

*Admission requirements:* GRE or MAT scores are required for admission. Strong consideration will be given to the cumulative GPA. In addition, performance within a communicative disorders major or prerequisite courses will be viewed as a particularly important criterion for admission. The completed application package must be received by October 15 for spring admission and March 1 for fall admission.

*Program requirements (54 credits):* Required courses consist of the following: CMD 493, 504, 550 (A, B, C), 560, 561, 564, 569, 570, 582, 583, 584, 585, and 592. Nonthesis option: written comprehensive examination; CMD 504; 40 credits in speech-language pathology. Thesis option: thesis; CMD 504; 34 credits in speech-language pathology.

### Accelerated Bachelor's-Master's Degree in Speech-Language Pathology

*Admission requirements:* GRE or MAT for speech-language pathology; URI sixth-semester standing in communicative disorders with all major requirements completed and 25 elective credits remaining; a 3.00 cumulative grade point average and

3.20 in the major through the fifth semester; and two letters of recommendation from URI communicative disorders faculty.

URI undergraduate communicative disorders majors who have met requirements for early acceptance in the graduate program in speech-language pathology may follow a special sequence of graduate-level course work and clinical practicum during their senior year (see page 104 for more information). If eligible, following the award of the Bachelor of Science degree in communicative disorders, students may complete a 30-credit master's degree (rather than the usual 54-credit master's degree) in speech-language pathology in one year plus a summer of full-time graduate study.

**Program requirements:** Speech-language pathology students must take 24 specified graduate credits (at the 400 or 500 level) of communicative disorders course work in the senior year to complete the bachelor's degree in communicative disorders; 30 credits of course work in the fifth year (postbaccalaureate) at the 400 or 500 level. Specific course requirements are as stated in the regular two-year master's program (see previous page).

## Statistics

M.S.  
401-874-2701

**Faculty:** Professor Kowalski, *chairperson*; Professor Hanumara, *section head*. Professor Heltshe; Associate Professor Gonzalez; Adjunct Professor Ting; Adjunct Assistant Professor Warnes; Professor Emeritus Carney.

## Specializations

Experimental design, sampling, ecological statistics and biostatistics, statistical computation, simulation, multivariate analysis, nonparametric methods, classification and discrimination, analysis of variance, bootstrap and jackknife estimation, sequential methods, spatial statistics.

## Master of Science

**Admission requirements:** bachelor's degree including the equivalent of MTH 141, 142; MTH 243; MTH 215; CSC 201; STA 409, 412. GRE; advanced test in mathematics or undergraduate field is desirable.

Programs of study can be designed for individuals who are employed full-time.

**Thesis option program requirements:** a minimum of 24 credits (exclusive of thesis) including MTH 451, 452, either STA 501 or 502, and at least nine additional credits selected from STA 500, 501, 502, 520, 535, 541, 542, 550, 592, 611.

**Nonthesis option program requirements:** 33 credits distributed as follows: 1) MTH 451, 452, and either STA 501 or 502; 2) at least nine credits selected from STA 500, 501, 502, 520, 535, 541, 542, 550, 592, 611; 3) at least six of the remaining credits must be at the 500 level or above (exclusive of STA 591); 4) the above course work must include at least one course that requires a substantial paper involving significant independent study; and 5) written comprehensive examination.

## Doctor of Philosophy

See Applied Mathematical Sciences.

## Teacher Certification

401-874-4068

Students who did not obtain Rhode Island teacher certification as part of their undergraduate studies may do so by being admitted to a certification program or a master's degree program with a certification option and satisfactorily completing a prescribed set of courses in the appropriate fields. Applicants for elementary or one of the secondary fields described below must apply as master's degree students. Applicants for early childhood education, music education, or school library media certification may indicate the specific TCP program code on the application forms and submit two official transcripts of all prior academic

work, showing receipt of the bachelor's degree, plus a personal statement of objectives and two letters of recommendation.

Applications for the School of Education programs are reviewed by each individual specialization (see below). Admission is competitive, and admission into the elementary and secondary education programs occur once a year. Typically, the deadline for admission is early January. Interested students should contact the Office of Teacher Education, or the contact person (listed at the end of this section) in their area, for information on admission deadlines; they may also visit the School of Education's Web site at [uri.edu/hss/education/default](http://uri.edu/hss/education/default). If space becomes available for any particular program, completed applications for that program may be reviewed subsequently.

Passing the PPST is required as part of the application process: Reading 172, Writing 171, Math 171, or a score of 1,100 on the SAT is required as part of the application process. Please contact the appropriate department(s) in the following list for additional information relative to this requirement.

An interview is also required of all applicants. Students admitted to the TCP program are governed by the same academic standards as matriculated graduate students. Students in the School of Education, graduate and undergraduate certification and licensure programs, will be required to take and pass a content area exam(s) in their area of certification and any other exam required for state licensure prior to student teaching or final internship. Contact the Office of Teacher Education for the "passing" scores required for each discipline.

Further information can be obtained from the Office of Teacher Education at 401-874-5930 or from the following areas of specialization:

**Early Childhood Education:** Professor Susan Brand,, 401-874-2426

**Elementary Education:** Associate Professor Sandy Jean Hicks, School of Education, 401-874-5976

**Secondary Education**

English: Assistant Professor Diane Kern, 401-874-9490

Mathematics: School of Education, 401-874-4149x2

Science: Assistant Professor Jay Fogleman, 401-874-4161

Social Studies: School of Education, 401-874-7418

Languages: Associate Professor JoAnn Hammadou-Sullivan, Department of Modern and Classical Languages and Literatures, 401-874-4712

*Music Education:* Professor Carolyn Livingston, Department of Music, 401-874-2763

*School Library Media:* Associate Professor Cheryl McCarthy, Graduate School of Library and Information Studies, 401-874-2878

*Reading Assistance Program:* Professor Theresa Deeney, Assistant Professor Julie Coiro, 401-874-2682.

## Textiles, Fashion Merchandising, and Design

M.S.  
401-874-4574

*Faculty:* Professor Welters, *chairperson*. Professors Bide and Ordoñez; Associate Professors Hannel and Harps-Logan; Assistant Professors Kapstein, Kim, and Lillethun; Adjunct Associate Professor Warner; Adjunct Assistant Professor Warburton; Professors Emeriti Emery and Higa; Associate Professor Emerita Helms.

The department offers a wide variety of individualized programs in close association with other departments (Art, Chemistry, Education, History, Human Development and Family Studies, Marketing) and with various social science fields.

### Specializations

Textile science, historic textiles and costume, textile conservation, cultural analysis, and fashion merchandising.

## Master of Science

*Admission requirements:* GRE and a bachelor's degree with adequate preparation for the proposed area of study.

*Program requirements:* for thesis option, completion of a minimum of 30 credits, including six credits of thesis research. For nonthesis option, completion of a minimum of 33 credits, half of which must be TMD courses numbered 500 or above, including at least one course that requires a substantial paper or practicum involving significant independent study, and written comprehensive examinations. TMD 510 is a requirement for all students. For the textile science specialization, TMD 503 and 510; a statistics course. For the specializations focusing on historic textiles and costume, textile conservation, and cultural analysis, TMD 510, 518, 500 or 524, and a supervised internship (TMD 530, 2–4 credits); half of the remaining elective credits must be from TMD courses numbered 500 or above. A minimum of nine credits is required to achieve a competency level in an allied field such as art history, history, or anthropology; this may result in a program of more than 30 credits. The committee may elect to waive this requirement if the candidate has adequate preparation in the allied field as an undergraduate. Candidates lacking undergraduate courses in textile science and fashion history may be required to make up deficiencies without graduate credit. For the fashion merchandising specialization, TMD 510 and 524; six credits to be selected from TMD 432, 442, or 452; a statistics course. Candidates lacking undergraduate courses in textile science and fashion history may be required to make up deficiencies without graduate credit.

## Postbaccalaureate Certificate in Fashion Merchandising

This program is designed for students with a bachelor's degree who wish to further their education to gain a fundamental understanding of fashion merchandising.

Students may apply 400-level course work from the certificate program to the master's degree program.

*Admission requirements:* A bachelor's degree with a 3.00 GPA or higher. Applicants who do not meet the GPA requirement may enter by earning a combined score of 900 or above on the verbal and quantitative sections of the GRE.

*Program requirements:* Prerequisites for the 400-level courses include TMD 232, 303, 313, and 332 (10 credits). Students will be required to successfully complete 12 credits to be selected from TMD 402, 424, 432, 433, 442, and 452.

## Thanatology

### Postbaccalaureate Certificate in Thanatology

URI offers an interdisciplinary postbaccalaureate certificate program in thanatology, the study of loss, death, and grief. For more information, including a list of required courses and an application to the program, please visit [uri.edu/nursing](http://uri.edu/nursing) and click on "thanatology."

# COURSE INFORMATION



To see information on course offerings by semester, schedule, or instructor, please log on to e-Campus and click on "Search for Classes." The course listings on the following pages are also available online at [uri.edu/catalog](http://uri.edu/catalog).

## Course Numbering

Courses numbered 001–099 are pre-freshman and special undergraduate courses, and do not carry bachelor's degree credit. Those numbered 100–299 are lower-division undergraduate courses, and those numbered 300–399 are upper-division undergraduate courses. The 400-level courses are generally limited to juniors and seniors majoring in that field, but are open to other advanced undergraduates and graduate students with permission.

The 500-level courses are graduate courses for which a bachelor's degree is usually a prerequisite, but qualified seniors and honors students are admitted with permission. These courses should make up

the majority of course work for students working toward a master's degree. Courses at the 600 level are advanced graduate courses. The 900-level courses are special types of graduate courses for which no degree credit is given. They include courses offered to remedy deficiencies as well as workshops, institutes, and courses offered one time only by visiting faculty.

Courses with two numbers—e.g., GER 113, 114—indicate a year's sequence; generally, the first course is a prerequisite for the second and the two cannot be taken in reverse order without special permission. Parentheses after a course number enclose either the old course number or, in cases of multiple listings, the departments and numbers under which the course is also offered.

The number in parentheses after the course name indicates the number of credits, and the information in parentheses after the course description tells the format and number of hours per week (e.g. "Lec. 3" means three hours of lecture). "Pre.:" refers to a prerequisite. "S/U credit" signifies a course in which only grades of satisfactory or unsatisfactory are given. Courses that meet general education requirements are designated with a letter in parentheses indicating the appropriate group, as follows:

- (A) Fine Arts and Literature
- (FC) Foreign Language/  
Cross-Cultural Competence
- (L) Letters
- (EC) English Communication (General)
- (ECw) English Communication (Written)
- (MQ) Mathematical and  
Quantitative Analysis
- (N) Natural Sciences
- (S) Social Sciences

Courses that meet the general education diversity requirement are designated with a [D].

## Course Codes

ADE	Adult and Extension Education	GEG	Geography	PHP	Pharmacy Practice
AAF	African and African-American Studies	GEO	Geosciences	PHL	Philosophy
AVS	Animal and Veterinary Science	GER	German	PHT	Physical Therapy
APG	Anthropology	GRK	Greek	PHY	Physics
AMS	Applied Mathematical Sciences	HSA	Health Services Administration	PLS	Plant Sciences
AFS	Aquaculture and Fisheries Science	HBW	Hebrew	PSC	Political Science
ARB	Arabic	HIS	History	POR	Portuguese
ART	Art	HPR	Honors Program	PLA	Prior Learning Assessment
ARH	Art History	HDF	Human Development and Family Studies	PSY	Psychology
AST	Astronomy	HSS	Human Science and Services	PRS	Public Relations
BGS	Bachelor of General Studies	IME	Industrial and Systems Engineering	RLS	Religious Studies
BCH	Biochemistry	ITR	Internships and Experiential Education	RDE	Resource Development Education
BIO	Biological Sciences	ITL	Italian	REN	(see EEC)
BPS	Biomedical and Pharmaceutical Sciences	JPN	Japanese	RUS	Russian
BME	Biomedical Engineering	JOR	Journalism	SOC	Sociology
BUS	Business	KIN	Kinesiology	SPA	Spanish
CHE	Chemical Engineering	LRS	Labor Relations and Human Resources	STA	Statistics
CHM	Chemistry	LAR	Landscape Architecture	TMD	Textiles, Fashion Merchandising, and Design
CHN	Chinese	LAN	Languages	THE	Theatre
CVE	Civil and Environmental Engineering	LAT	Latin	URI	University of Rhode Island Freshman Seminar
CLA	Classics	LAS	Latin American Studies	WMS	Women's Studies
COM	Communication Studies	LET	Letters	WRT	Writing
CMD	Communicative Disorders	LIB	Library		
CPL	Community Planning	LSC	Library and Information Studies		
CSV	Community Service	LIN	Linguistics		
CLS	Comparative Literature Studies	MAC	Master of Science in Accounting		
CSC	Computer Science	MBA	Master's in Business Administration		
DHY	Dental Hygiene	MAF	Marine Affairs		
ECN	Economics	MTH	Mathematics		
EDC	Education	MCE	Mechanical Engineering and Applied Mechanics		
EDP	Ph.D. in Education	MTC	Medical Technology		
ELE	Electrical Engineering	MIC	Microbiology		
EGR	Engineering	MSL	Military Science and Leadership		
ENG	English	MUS	Music		
ELS	English Language Studies	NRS	Natural Resources Science		
ENT	Entomology	NES	New England Studies		
EEC	Environmental Economics	NVS	Nonviolence and Peace Studies		
EVS	Environmental Sciences	NUR	Nursing		
FLM	Film Media	NFS	Nutrition and Food Sciences		
FOS	Forensic Science	OCE	Ocean Engineering		
FRN	French	OCG	Oceanography		
		PHC	Pharmacy		

*Please note: The College of Business Administration has assigned new BUS course codes to courses previously designated in the following areas:*

ACC	Accounting
BAC	Business Analysis and Computing
BSL	Business Law
FIN	Finance
INS	Insurance
MGT	Management
MIS	Management Information Systems
MSI	Management Science
MKT	Marketing

For an explanation of course codes and other numbers and abbreviations, see pages 159–60.

## Adult and Extension Education (ADE)

### 491, 492 Special Problems in Adult Education (1–3 each)

Specialized problems in adult and extension education. Seminars or supervised individual projects. (Independent Study) 491 topics: A, B, C are service learning. Pre: permission of instructor.

## African and African-American Studies (AAF)

Director: Professor Hamilton

### 150 Introduction to Afro-American History

See History 150. (L) [D]

### 201 Introduction to African-American Studies (3)

Interdisciplinary exploration of some of the pivotal themes and issues in the study of peoples of African descent. (Lec. 3) (L) [D]

### 202 Introduction to Afro-American Culture (3)

Interdisciplinary survey of the social origins of Afro-American culture. (Lec. 3/Online)

### 240 Race and Ethnic Relations

See Sociology 240.

### 247 Introduction to Literature of the African Diaspora

See English 247. (A) [D]

### 248 African-American Literature from 1900 to the Present

See English 248. (A) [D]

### 290 African-American Women: Service, Community, and Self (3)

Introductory course on African-American women. Focuses on the idea of African-American women's service which has been a constant theme and necessity for the African-American community in North America. (Lec. 3)

### 300 Special Topics in African and Afro-American Studies (3)

Selected contemporary topics, problems, issues, and individuals from the field of African and Afro-American studies. The topical format allows in-depth analysis of some significant aspect of the African and Afro-American experience. (Lec. 3) Topic: Conditions for Community Service is service learning. Pre: 201 or 202 or permission of instructor. May be repeated with different topic.

### 330 (or ARH 330) African-American Art in Context: A Cultural and Historical Survey I (3)

Examines African-American art and artifacts of the 17th, 18th, and 19th centuries, highlighting the

dominant attitudes as well as the political and social realities of the times. (Lec. 3)

### 331 (or ARH 331) The African-American Artist in Context: A Cultural and Historical Survey II (3)

Examines art and artists, the trends, philosophical attitudes, political realities, social influences, and artistic styles of 20th century African-American artists. (Lec. 3)

### 333 Oral Interpretation of Black Literature

See Communication Studies 333.

### 336 Social Inequality

See Sociology 336.

### 352 (or ENG 352) Black Images in Film (3)

Exploration of the cultural, economic, political, and ideological motivations behind the standard representation of people of the African diaspora in cinema in the U.S. and other areas of the world, while examining film as a genre with a vocabulary and idiom of its own. (Lec. 3)

### 355 Black Women in the US: Colonial Times to the Present

See History 355. (L) [D]

### 356 Black Urban History: Late 19th and 20th Centuries

See History 356. (L) [D]

### 359 History of Slavery in America

See History 359.

### 360 (or ENG 360) Africana Folk Life (3)

Examination of the process of creativity, context, and form in the oral literary tradition of peoples of African descent throughout the world. (Lec. 3) In alternate years. Next offered fall 2007.

### 362 African-American Literary Genres other than the Short Story and Novel

See English 362.

### 363 African-American Fiction

See English 363.

### 364 Contemporary African Literature

See English 364.

### 366 Black Political Thought During the Age of Civil Rights and Black Power

See History 366.

### 367 Contemporary African-American Political Thought

See History 367.

### 380 (or PSC 380) Civil Rights Movement (3)

Major transformations in American life brought about by the civil rights movement in law, in social relations, in the role of government. Focus on the period between 1954 and 1968 in an effort to identify and evaluate the changes in government and civil society that occurred during this period. (Lec. 3) Service learning.

### 372 African-Americans and the Legal System (3)

Focus on constitutional changes designed to influence the political status of African-Americans in the United States. (Lec. 3)

### 388 History of Sub-Saharan Africa

See History 388.

### 390 Directed Study or Research (3)

Directed study arranged to meet the needs of individual students who desire independent work and to promote collective research efforts in African and Afro-American Studies. (Independent Study) Pre: permission of director.

### 399 Introduction to Multicultural Psychology

See Psychology 399.

### 408 African Government and Politics

See Political Science 408.

### 410 (or PSC 410) Issues in African Development (3)

A seminar focusing on the dynamics of African development, including political and social change, economic development, education, urbanization, rural development, environmental management, labor and business, industrialization, and technology transfer. (Seminar) Pre: APG 313 or PSC 201 or HIS 388 or permission of instructor.

### 415 (or PSC 415) Dynamics of Social Change in the Caribbean (3)

Exploration of the slave trade and the origins of Africans and people of African descent in the Caribbean. Emphasis on political and economic relations with the U.S. and the impact of modernization. (Lec. 3) Not for graduate credit.

### 428 Institutional Racism

See Sociology 428.

### 466 Urban Problems

See Political Science 466.

### 474 Literature of the African Diaspora

See English 474.

### 498 Senior Seminar in African and Afro-American Studies (3)

Study of a particular issue of the experience of Blacks in the diaspora from an interdisciplinary perspective. Subject or theme will change yearly. Pre: 150, 201, 202, senior standing, or permission of instructor. Not for graduate credit.

## Animal and Veterinary Science (AVS)

Chairperson: Professor Bengtson

### 101 Introduction to Animal Science (3)

Animal industry's role in world and national economy; inheritance, growth, physiology, nutrition, and diseases of domestic animals and poultry;

geographic distribution and marketing of animal products. (Lec. 3) (N) [D]

**102 Introduction to Animal Science Laboratory (1)**

Laboratory and demonstrations of principles of the animal industries. (Lab. 2) Pre: credit or concurrent enrollment in 101. Restricted to AVS majors.

**104 Animal Management Techniques (2)**

Lecture and laboratory in the handling skills needed to maintain animal comfort and productivity. (Lec. 1, Lab. 2) Pre: 101 and 102.

**110 Freshman Seminar in Animal and Veterinary Science (1)**

Overview of the animal and veterinary sciences and the fields they encompass. Student projects, presentations, and field trips. (Seminar) Pre: 101. Open only to freshmen.

**201 Companion Animal Management (3)**

Nutrition, reproduction, behavior, and management of companion animals. (Lec. 3) Pre: 101.

**212 Feeds and Feeding (3)**

Principles and practices of feeding farm animals, nutrient requirements, physiology of digestion, identification and comparative value of feeds, computer calculation of rations for livestock. (Lec. 2, Lab. 2) Pre: 101 and 102.

**301, 302 Seminar in Animal and Veterinary Science (1 each)**

Readings, reports, lectures, and discussions on scientific topics in animal and veterinary science. Subject matter adapted to student and faculty interest. (Seminar) Pre: junior or senior standing.

**323 Animal Management I (3)**

Principles of care and management of domesticated ruminant animals including dairy cattle, beef cattle, sheep, and goats. Emphasis on the production methods of the animal industries. Participation in field trips required. (Lec. 3) Pre: 101.

**324 Animal Management II (3)**

Principles of the care and management of domesticated monogastric animals including swine, horses, and poultry. Emphasis will be given to modern production methods. Participation in field trips required. (Lec. 3) Pre: 101.

**325 Animal Management III (3)**

Principles of the care and management of exotic ruminant and monogastric animals. Emphasis will be on handling, care, feeding, breeding, behavior, and disease prevention. Participation in field trips. Pre: 101 or permission of instructor.

**331 Anatomy and Physiology (3)**

Fundamentals of anatomy and physiology of domesticated animals. (Lec. 3) Pre: BIO 101 or CHM 101 or 103.

**332 Animal Diseases (3)**

Specific diseases of avian and mammalian species; etiology, symptoms, and control. (Lec. 3) Pre: 331.

**333 Anatomy and Physiology Laboratory (1)**

The fundamental anatomy of domestic animals is examined. Demonstrations of physiological principles are performed. Laboratory techniques for screening physiological function in vivo and in vitro are covered. (Lab. 2) Pre: credit or concurrent enrollment in 331.

**343 Behavior of Domestic Animals (3)**

Examination of the basis for, and exhibition and control of, behavioral patterns of domestic animals. (Lec. 3) Pre: 101.

**365 Laboratory Animal Technology (3)**

Management of laboratory animals with emphasis on animal biology, breeding, care, health, research use, and animal welfare. (Lec. 2, Lab. 2) Pre: BIO 101.

**372 Introductory Endocrinology (3)**

Morphology and physiology of endocrine glands. Roles of hormones in regulation of body processes. Discussion of all endocrine organs and relationship of endocrine and nervous systems. Emphasis on domesticated animals and fowl. (Lec. 3) Pre: BIO 101 or permission of instructor.

**390 Wildlife and Human Disease**

See Entomology 390.

**399 Animal Science Internship (1–6)**

Options in various professional experience programs involving the animal and veterinary sciences. (Practicum) Pre: permission of instructor. May be repeated for a maximum of 6 credits. S/U credit.

**412 Animal Nutrition (3)**

Principles of animal nutrition, metabolism of carbohydrates, proteins, and fats; mineral and vitamin requirements; nutritive requirements for maintenance, growth, reproduction, lactation, and work. (Lec. 3) Pre: junior standing or above.

**420 Animal Breeding and Genetics (3)**

Scientific methods for the genetic improvement of domesticated animals. Genetic variation and expected results of different types of selection and mating systems. (Lec. 3) Pre: junior standing or above. In alternate years.

**462 Laboratory Animal Techniques (3)**

Laboratory animal applications in clinical studies; research in nutrition, endocrinology, and other selected topics. (Lec. 1, Lab. 4) Pre: 365.

**463 Animal Veterinary Technology (3)**

Theory and application of animal health practices required of paraprofessionals in a veterinary practice. The role of the veterinary assistant in a modern clinical practice will be emphasized. (Lec. 2, Lab. 3) Pre: 331.

**472 Physiology of Reproduction (3)**

Anatomy and physiology of reproduction, with emphasis on domestic animals. Current experimentation in endocrinology of reproduction is surveyed. (Lec. 2, Lab. 2) Pre: BIO 101 and AVS 331 or permission of instructor.

**491, 492 Special Projects (1–3 each)**

Work that meets the individual needs of students in animal and veterinary science. (Independent Study)

**500 Instructional Methods in Life Sciences (2)**

Organization and development of instructional material and teaching methods for graduate teaching assistants in the life sciences. Emphasis on practice presentation in classroom/lab setting. (Lec. 2) Pre: graduate standing or permission of instructor for senior undergraduate.

**503 Pathobiology**

See Aquaculture and Fisheries Science 503.

**508 Seminar in Biological Literature**

See Biological Sciences 508.

**538 Epidemiology of Infectious Diseases**

See Microbiology 538.

**591, 592 Research Problems (3 each)**

Research problems to meet individual needs of graduate and honors students in the fields of animal breeding, nutrition, or physiology and food science. (Independent Study) Pre: permission of chairperson.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Anthropology (APG)**

*Chairperson: Professor Loy*

**200 (or LIN 200) Language and Culture (3)**

Cross-cultural survey of the interaction of culture and language. Introduction to various fields of linguistic research emphasizing descriptive and semantic investigations. Linguistic studies used as illustrative material. (Lec. 3) (S) [D]

**201 Human Origins (3)**

The biocultural evolution of humans; review of the fossil record. (Lec. 3) (N) [D]

**202 Introduction to Archaeology (3)**

Archaeological perspectives on the major developments in humanity's past, from the evolution of the earliest humans to the emergence of agriculture and the earliest urban civilizations. (Lec. 3) (S)

**203 Cultural Anthropology (3)**

Anthropological approaches to the study of peoples and cultures around the world. (Lec. 3) (S) [D]

**220 Introduction to the Study of Language**

See Linguistics 220.

**300 Human Fossil Record (3)**

Investigation into the biocultural evolution of hominids over the last 15 million years; course based on evidence from fossil bones, teeth, and paleoecological reconstruction. (Lec. 2, Lab. 2) Pre: 201 or 202 or permission of instructor.

**301 The Anthropology of Nutrition (3)**

Exploration of the cultural and biological relationships of food, diet, and nutrition among human populations. The evolutionary history of food production, distribution, preparation, and selection will be considered. (Lec. 3) Pre: sophomore standing. (S) [D]

**302 Methods of Anthropological Inquiry (3)**

Logic, techniques, and problems in obtaining true information in anthropological inquiry. Problems from anthropological field work and use of cross-cultural data. (Lec. 3) Pre: 203 or permission of instructor. Restricted to juniors and seniors.

**303 New World Prehistory (3)**

Reconstruction of American Indian cultural history from earliest times to the period of European discovery and colonization, using archaeological evidence and perspectives. (Lec. 3)

**309 Anthropology of Religion (3)**

Religious systems of selected peoples around the world; examination of theories concerning the origins, functions, and natures of these religions. (Lec. 3)

**310 Topics in Anthropology (3)**

Analytical study of selected topics in anthropology. Subjects will vary according to the expertise and availability of instructors. (Lec. 3) Pre: one anthropology course or permission of instructor. May be repeated with different topic.

**311 Native North Americans (3)**

Survey of selected North American Indian groups from before European contact to the present. Modern reservation life; influence of the federal government on Indian life. (Lec. 3)

**313 Peoples of Africa (3)**

Studies of Africa's peoples and cultures from prehistoric times to the present. (Lec. 3)

**315 Cultures and Societies of Latin America (3)**

Contemporary cultures and societies; emphasis on adjustment of the people to modern social and economic changes. (Lec. 3) Pre: 203 or permission of instructor.

**319 Cultural Behavior and Environment (3)**

Cultural adaptations made by traditional and industrial societies to natural and human environments using examples from prehistory and ethnography. (Lec. 3) In alternate years. Next offered 2007-08.

**320 Sociolinguistics**

See Linguistics 320.

**322 Anthropology of Modernization (3)**

Patterns and processes of contemporary social and cultural change among traditional people. (Lec. 3) Pre: 203 or permission of instructor.

**325 The Irish (3)**

An examination of the beliefs, customs, and social institutions which comprise Irish life, at home and abroad. (Lec. 3)

**327 History of Physical Anthropology (3)**

An examination of some classic works in human evolution and physical anthropology. Designed to provide an understanding of the philosophical and historical development of biological anthropology. (Lec. 3) (L)

**350 Human Variation (3)**

Anthropological investigation into the nature and causes of human biological diversity with emphasis on living populations. Students enrolled in this course will serve as a sample for measuring human variation. (Lec. 3) Pre: any 200-level anthropology course or permission of instructor.

**400 Evolution, Culture, and Human Disease (3)**

Investigation of the dynamic interrelationships among culture, human disease, and evolution. Encompasses study of living peoples as well as our fossil and prehistoric ancestors, and includes infectious and chronic diseases. (Lec. 3) Pre: introductory physical anthropology, biology, or zoology, or permission of instructor.

**401 History of Anthropological Theory (3)**

Theory from the sixteenth century to the present; readings from Tylor, Morgan, Boas, Sapir, Kroeber, Benedict, Malinowski, and Radcliffe-Brown. (Seminar) Pre: 203 or permission of instructor.

**405 (or PSY 405) Psychological Anthropology (3)**

Study of human behavior in different cultures employing psychological concepts and theories. (Lec. 3) Pre: 203 or permission of instructor.

**412 Primate Behavior and Organization (3)**

Investigation of the naturalistic behavior and organization of nonhuman primates, and the relationship of primate data to anthropology. (Lec. 3) Pre: 201 or permission of instructor.

**413 (or MAF 413) Peoples of the Sea (3)**

Examination of human sociocultural adaptation to the seas. (Lec. 3) Pre: 203 or MAF 100 or graduate status. Open only to juniors, seniors, and graduate students.

**417 Archaeological Method and Theory (3)**

Problems of collection and interpretation of data, emphasizing nature of archaeological investigation, classification, dating, reconstruction of social contexts. Laboratory demonstrations. (Lec. 3) Pre: permission of instructor. In alternate years. Next offered 2008-09.

**427 Unity of Anthropology (3)**

Survey of recent advances in the subfields of anthropology. Designed to help majors appreciate the unity of anthropology in an age of specialization. (Seminar) Pre: junior or senior standing.

**470 Problems in Anthropology (3)**

Self-guided study and research, seminar, or individual program. (Independent Study) Pre: permission of chairperson.

**465 Seminar in Cultural Heritage**

See Art History 465.

**490 Underwater Historical Archaeology**

See History 490.

**565 Seminar In Cultural Heritage**

See Art History 565.

**Applied Mathematical Sciences (AMS)****699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Aquaculture and Fisheries Science (AFS)**

*Chairperson:* Professor Bengtson

**101 Freshman Inquiry into Fisheries and Aquaculture (1)**

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in fisheries and aquaculture. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

**102 Introductory Aquaculture (3)**

Aquaculture and its historical development worldwide, its contribution to food supply, non-food species, methods of production, environmental and ecological considerations, culture practices employed for selected species, selective breeding, feeding, disease, processing, and marketing. (Lec. 3)

**104 Introductory Aquaculture Laboratory (1)**

Field trips to local trout hatcheries, shellfish wholesalers, commercial aquaculture operations, aquaculture gear suppliers, and government research aquaculture facilities. Introduction to water quality monitoring. (Lab. 3) For Aquaculture and Fisheries Science majors. Must be taken concurrently with 102.

**120 Introduction to Fisheries (2)**

Introduction to international fishery issues, practices, patterns, and public policy based on readings and discussion in a tutorial setting. Concurrent registration in 121 required. (Lec. 2)

**121 Introduction to Fisheries Laboratory (1)**

Introduction to local fisheries and selected nearshore fishery ecosystems; exposure to use and operation of exemplary fishing and sampling gears in local fresh waters and estuaries. Concurrent registration in 120 required. (Lab. 3)

**190 (or BCH, MIC, NRS, PLS 190) Issues in Biotechnology (3)**

Introduction to modern biotechnology in medical, pharmaceutical, forensic, agricultural, marine, and environmental applications. Consideration of ethical, environmental, health, and social issues. (Lec. 3) (N)

**201 Shellfish Aquaculture (3)**

Culture of marine and freshwater mollusks. Emphasis on life history, biological requirements, culture practices, and economic importance of major species used for human food or shell products. (Lec. 2, Lab. 3) Pre: 102 and one semester of general chemistry.

**202 Finfish Aquaculture (3)**

Introduction to the culture of finfish, emphasizing general principles and hands-on experience. Topics include water quality, spawning, care and maintenance, and growth of selected freshwater and marine species. (Lec. 1, Lab. 6) Pre: 102 or equivalent.

**210 Introduction to the Marine Environment (3)**

Introduction to estuarine, coastal, and oceanic environments; physical and biological processes affecting basins, bottoms, water properties, marine life, and the atmosphere. (Lec. 3) (N)

**211 Introduction to the Marine Environment Laboratory (3)**

Laboratory exercises on the marine environment. Unit conversions, measuring physical features and times, chart work and positioning problems, measuring and processing physical marine parameters, beach and submerged landscape profiling. (Lab. 2) (N)

**270 Basic Scuba Diving in Science and Technology (3)**

Rigorous introduction to scuba diving including equipment, diving physics, no-decompression and decompression diving, basic skills, and safety. Emphasis on development of basic knowledge and skills appropriate for a diving scientist or technician. Open Water Diver Certification by the National Association of Underwater Instructors is provided. (Lec. 2, Lab. 3) Pre: scuba diving physical examination and demonstration of strong swimming skills.

**290 Small Boats: Their Equipment and Operation (3)**

Principles and practices of vessel operation, from outboard skiffs to small trawlers. Basic nomenclature, navigation, and shiphandling. Rigging and working gear used in marine resource development. (Lec. 2, Lab. 3)

**300 Aquaculture Health Management (4)**

Causes and mechanisms of diseases in cultured marine and freshwater organisms, with emphasis on diagnosis, prevention, and treatment, as well as environmental and regulatory issues. (Lec. 3, Lab. 2)

**311 Exploration of Marine Bioresources (3)**

Explores marine bioresources for pharmaceuticals, nutraceuticals, and novel biomaterials. Distribution and biodiversity of marine organisms important to industrial utilization. Culture and recovery technologies and assessment of bioactivity. (Lec. 3)

**312 Fish Habitat (3)**

An introduction to fish habitat including conservation legislation, identification and mapping, fishing and non-fishing impacts, rehabilitation, and socio-economic considerations. (Lec. 3) Pre: 120. Offered in spring of even-numbered years.

**315 Living Aquatic Resources (3)**

Survey of major aquatic resource groups; life histories, distribution, and exploitation of representative finfishes, mollusks, and crustacea in major fisheries ecosystems; management practices and patterns of fisheries development. (Lec. 3) Pre: 210 and BIO 113 or 101 or at least one semester of general animal biology.

**316 Living Aquatic Resources Laboratory (1)**

Study of representative organisms of major resource groups; finfish taxonomy, anatomy, and osteology; exemplary mollusks and crustacea; introduction to larval fishes and fish age estimation; character analysis. (Lab. 3) Pre: concurrent registration in 315. Offered in fall of odd-numbered years.

**321 World Fishing Methods (3)**

A survey of fish catching methods of the world and the electronic enhancements to fishing that have increased fishing power. Application of these methods to scientific sampling, commercial harvesting, recreational and subsistence fishing. (Lec. 3) Pre: 120 is recommended. Concurrent enrollment in 322 required. Offered in spring of odd-numbered years.

**322 Laboratory for World Fishing Methods (1)**

An introduction to the basic techniques used in fishing gear construction, maintenance, and operation. (Lab. 3) Pre: 120 is recommended. Concurrent enrollment in 321 required. Offered in spring of odd-numbered years.

**332 Interactions between Fisheries and Protected Species (3)**

An introduction to the issues associated with interactions between fisheries and protected species including legislation, and methods of assessing stock abundance and number of interactions. Case studies of specific interactions will be reviewed. (Lec. 3) Pre: 120. Offered spring of odd-numbered years.

**362 Crustacean Aquaculture (3)**

Reproductive biology, breeding, culture systems, nutrition, genetics, and ecology of selected species of cultured crustaceans. Representative species of penaeid shrimp, freshwater prawns, crayfish, crabs, lobsters, and brine shrimp will be discussed. (Lec. 3) Pre: 201 and 202. Offered spring of odd-numbered years.

**391, 392 Special Problems and Independent Study (1-3 each)**

Special work to meet individual needs of students in various fields of fisheries and marine technology. (Independent Study)

**415 Fishery Science (3)**

Biology of aquatic resource animals, fisheries measurement and assessment, fisheries ecology, fishing methods, aquatic resource management and conservation, fish and shellfish farming. (Lec. 3) Pre: 315 and college mathematics; concurrent registration in 416.

**416 Fishery Science Laboratory (1)**

Practices and techniques of fisheries science. Field exercises in local model estuary and lake ecosystems; sampling methods; enumerating and documenting collections; measuring and reporting environmental attributes; estimating population parameters. (Lab. 2) Pre: concurrent registration in 415.

**421 Design of Fish Capture Systems (3)**

Detailed study of the design considerations and methods of construction of specific representative commercial and scientific sampling fish capture gear. Full-scale and model nets are designed, constructed, and tested. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor.

**425 Aquaculture and the Environment (3)**

Impacts of aquaculture practices on the environment, including habitat alteration, release of drugs and chemicals, and interaction of cultured and wild organisms. Methods to reduce or eliminate those impacts: modeling, siting, and monitoring of aquaculture facilities; use of polyculture and water reuse systems. (Lec. 3) Pre: 102.

**426 Ecological Aquaculture (3)**

Study of the natural and social ecology of aquaculture ecosystems by applying principles of the systems ecology to the management of the world's aquaculture ecosystems. (Lec. 3) Pre: 102. Not for graduate credit.

**432 Marine Finfish Aquaculture (3)**

Culture of non-salmonid marine fish worldwide, with emphasis on the hatchery phase. Broodstock, larval rearing, live and formulated feeds, grow-out systems, stock enhancement. Requires student project on facility design. Pre: 102.

**433 Research Diving Methods (3)**

Underwater methods used to assess biological, physical, chemical, and geological characteristics of estuarine and coastal environments are presented and used to investigate seasonal changes in these parameters in the Narragansett Bay environment. (Lec. 2, Lab. 3) Pre: scuba certification and permission of instructor.

**434 Aquatic Food Quality and Processing (4)**

See Nutrition and Food Sciences 434

**435 Aquatic Food Product Development (3)**

Concept of product developments, physicochemical principles and process technology for aquatic food and marine bioproduct development, survey of aquatic and marine products and manufacturing processes, and lab exercises on key products. (Lec. 2, Lab. 2) Pre: 434 or equivalent.

**481 Shellfish Aquaculture Laboratory (2)**

Detailed study of hatchery, nursery, and grow-out techniques for the production of bivalve mollusks. Culture of phytoplankton, conditioning of broodstock, spawning, larviculture, settlement, metamorphosis, nursery and grow-out methods. (Lab. 6) Pre: 201 or permission of instructor. Offered fall of odd-numbered years.

**483 Salmonid Aquaculture (3)**

Principles of salmonid aquaculture, including culturing, spawning, incubation, feed formulation and feeding, disease control, genetics, systems management, harvesting, and transport. (Lec. 2, Lab. 2) Pre: 102 or equivalent.

**486 Applied Physiology of Fish (3)**

Functions of the organ systems of fish, regulation of physiological functions and environmental interactions. Emphasis on the teleosts. (Lec. 3) Pre: BIO 341 or equivalent.

**491, 492 Special Projects (1-3 each)**

Work that meets the individual needs of students in aquaculture. (Independent Study)

**500 Diseases of Aquatic Organisms (3)**

Nature, causes, diagnosis, and spread of diseases limiting piscine freshwater and marine aquaculture projects. Emphasis on prevention, control, and treatment of more common diseases affecting hatchery management. (Lec. 3) Pre: 102; BIO 201 or AVS 331.

**501, 502 Seminar (1 each)**

Preparation and presentation of scientific papers on selected subjects in animal pathology and virology. (Seminar)

**503 (or AVS 503) Pathobiology (3)**

Mechanisms and causes of disease in homeothermic and poikilothermic vertebrates. Cell death, inflammation, infection, metabolic disorders, and neoplasia in relation to fish, reptiles, birds, and mammals. Effects of disease at the cellular, tissue, organ, and

organismal levels with a medical orientation. (Lec. 3) Pre: BIO 201 or AVS 331.

**508 Seminar in Biological Literature**

See Biological Sciences 508.

**510 Application of Quantitative Methods to Marine Fisheries Ecology (3)**

An introduction to quantitative methods used to model population growth, density dependency, exploitation, predator-prey systems, competition, and multi-species communities in marine ecosystems. An independent research project is required for graduate credit. (Lec. 2, Lab. 3) Pre: BIO 262 and MTH 111. Offered fall, even years.

**516 Early Life History of Aquatic Resource Animals (3)**

Biology and ecology of juvenile and planktonic commercially important species; dynamics of reproduction, fecundity, growth, distribution, and behavior as modulated by the physical environment; identification, enumeration, and sampling. (Lec. 2, Lab. 3) Pre: 415 and STA 308.

**521 Evaluation of Fish Capture System (3)**

Evaluation of fish capture system behavior and performance using empirical, theoretical, model scaling, and statistical analysis techniques. Field and laboratory measurement procedures. (Lec. 2, Lab. 3) Pre: 421 or permission of instructor.

**531 Fisheries Stock Assessment (3)**

A quantitative approach to describing the processes of fish growth and mortality, the estimation of stock size, the prediction of stock yield, and management practices. Spreadsheets and other microcomputer applications will be used for analysis and modeling. (Lec. 2, Lab. 3) Pre: 415, STA 409 or permission of instructor.

**532 Experimental Design**

See Statistics 532.

**534 (or MIC 534) Animal Virology (3)**

Basic properties, classification, and evolution of animal viruses. Individual agents are studied in detail. (Lec. 3) Pre: MIC 432, 533, or permission of chairperson.

**536 (or MIC 536) Virology Laboratory (2)**

Methods employed in diagnosis and for the investigation of the biological, physical, and chemical properties of animal viruses. (Lab. 6) Pre: credit or concurrent enrollment in 534.

**538 Epidemiology of Infectious Diseases**

See Microbiology 538.

**576 Seminar in Genetics of Aquatic Organisms (3)**

Modes of inheritance found in fish including chromosome number, polyploidy, sex determination, and hybridization. Heritabilities, methods of selection, and mating systems used in the development of fish suited for intensive culture. (Seminar) Pre: BIO 352.

**581 Current Topics in Molluscan Aquaculture (3)**

Review and critical analysis of recent literature within the field of molluscan biology with emphasis on application to mariculture techniques. Student presentation of selected topics and field trips to state-of-the-art mariculture facilities. (Lec. 3) Pre: graduate standing or senior standing with permission of instructor.

**584 Advanced Aquaculture Systems (3)**

Development of design criteria, operational analysis, and management of selected species in water reuse systems. (Lec. 2, Lab. 2) In alternate years.

**586 Fish Nutrition (3)**

Digestion and metabolism of carbohydrate, protein, and lipids by fish. Role of vitamins and minerals in metabolism and associative nutritional diseases resulting from deficiencies. Inadvertent toxic factors in fish feeds. (Lec. 3) Pre: CHM 228 or equivalent. In alternate years.

**591, 592 Special Projects (1-3 each)**

Research projects in animal pathology, virology, and aquaculture. (Independent Study) Pre: graduate standing or permission of chairperson.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee (Independent Study) S/U credit.

**930 Workshop in Aquaculture Topics for Teachers (0-3)**

Designed especially for teachers of science. Basic topics in aquaculture from an advanced or pedagogical perspective. Pre: teacher certification.

**Arabic (ARB)**

Chairperson: Professor Morello

**101 Beginning Arabic I (3)**

Fundamentals of grammar and pronunciation of Arabic; exercises in reading, writing, and conversation. (Lec. 3) Students enrolling in this course should have had no more than one year of previous Arabic study. (FC) [D]

**102 Beginning Arabic II (3)**

Continuation of 101. (Lec. 3) Students enrolling in this course should have taken 101 or its equivalent. (FC) [D]

**103 Intermediate Arabic I (3)**

Development of facility in reading; exercises in grammar, writing, and conversation. (Lec. 3) Students enrolling in this course should have taken 102 or equivalent. (FC) [D]

**104 Intermediate Arabic II (3)**

Continuation of 103. (Lec. 3) Students enrolling in this course should have taken 103 or its equivalent. (FC) [D]

## Art (ART)

Chairperson: Professor Pagh

### 002 Sophomore Review (0)

Presentation by majors of a broad selection of their previous college-level work for review by faculty. (Studio) Pre: 101, 103, 207.

### 101 Two-Dimensional Studio (3)

Exploration of principles of visual organization relating primarily to formulations on the two-dimensional surface by means of fundamental studies and assignments in studio techniques. (Studio 6) (A)

### 103 Three-Dimensional Studio (3)

Introduction to problems in three-dimensional organization. Observations from objects with discussion and application to simple mold and casting techniques. Introduction to the use of basic materials, clay, plaster, and wood. (Studio 6)

### 203 Color (3)

Visual perception of color and manipulation of light as they pertain to two- or three-dimensional formulations. (Studio 6)

### 204 Digital Art and Design I (3)

Introduction to various digital technologies used in the production of fine art and applied design. Students gain the basic technical skills and theoretical knowledge of digital still imaging, animation, and interactivity information design. (Studio 6)

### 207 Drawing I (3)

Visual perception and observation, using nature structures, drawing from models, still life, and landscape; exercises in basic drawing techniques and principles. (Studio 6) (A)

### 208 Drawing II (3)

Advanced practice in graphic conceptions; exercises in spatial problems, organizing relationships of abstract forms and structures; advanced drawing media. (Studio 6) Pre: 207.

### 213 Photography I (3)

Introduction to photography, exploration of related techniques using light-sensitive materials. (Studio 6)

### 215 Video and Filmmaking I (3)

Introduction to basic filmmaking and video techniques and theories of moving images. Emphasis on film and video as artistic media. Required projects and readings. (Studio 6) May be repeated for a maximum of 6 credits with permission of instructor.

### 221 Painting I (3)

Techniques of painting, utilizing as reference the natural and human-made environments. Traditional and contemporary materials. (Studio 6) Pre: 101 and 207.

### 231 Printmaking I (3)

Introduction to the intaglio process and monotype, with an emphasis on image development and

workshop procedures (Studio 6) Pre: 101 or 207 or permission of instructor.

### 233 Relief Printing and Typography I (3)

Introduction to basic elements of graphic design; letter forms, their relationship to the page and to the image. Various traditional and modern reproduction techniques, workshop practice in typesetting and layout. (Studio 6) Pre: 101 or permission of chairperson.

### 243 Sculpture I (3)

Formation of three-dimensional forms employing basic sculptural materials and techniques. Basic media, emphasis on form, material, and structural means in studio practice. (Studio 6) Pre: 103 or permission of instructor.

### 300 Art Gallery Internship (3)

Curatorial responsibilities taught through hands-on experience in exhibition programs including exhibition research, production of interpretive texts and lectures, art object preparation, registration, and installation. (Practicum) Pre: junior standing and permission of instructor and chairperson. S/U only.

### 301 Projects in Studio (3)

Studio projects under guidance of instructor selected by student. (Independent Study) Pre: permission of chairperson and instructor.

### 303 Topics in Studio (3)

Selected topics based on particular materials, techniques, or thematic premises. Topics and semesters to be announced. (Studio 6) Pre: art major status, or permission of instructor or chairperson. May be repeated for credit with permission of instructor and chairperson.

### 304 Digital Art and Design II (3)

Continuation of 204 with an emphasis on the development of professional quality resources, content, and output. Assignments cover the fundamental elements of graphic design in the digital environment and the cross influences among fine art, mass media, and new media. (Studio 6) May be repeated once for credit with permission of instructor. Pre: 204.

### 305 Photographic Alternatives (3)

Topics emphasize possibilities in photographic themes and techniques, including alternative processes, collotype, and studio practice. (Studio 6) Pre: 213 and permission of instructor. May be repeated with permission of instructor and chairperson.

### 306 Digital Art and Design III (3)

Continuation of 304 with an emphasis on contemporary issues related to art, information technology, and social influence. Students are required to develop Web-based projects. (Studio 6) May be repeated once for credit with permission of instructor. Pre: 304.

### 307 Art Studio Internship (3 or 6)

Work in an institution, agency, or organization supervised by an art professional and a studio faculty member. Activities, expectations, performance assessments, hours, and credits determined through prior consultation. (Practicum) Limit of 6 credits toward graduation. Pre: junior standing in the B.A. or B.F.A. studio program and permission of chairperson. S/U only.

### 309 Drawing III (3)

Further problems in drawing with emphasis on independent work. (Studio 6) Pre: 208 or permission of instructor.

### 314 Photography II (3)

Continuation of 213. (Studio 6) Pre: 213. May be repeated for credit with permission of instructor.

### 316 Video and Filmmaking II (3)

Continuation of 215 with added emphasis on sound. Required projects and reading. (Studio 6) Pre: 215. May be repeated once for credit with permission of instructor.

### 322 Painting II (3)

Continuation of 221. (Studio 6) Pre: 221. May be repeated for credit with permission of instructor.

### 332 Printmaking II (3)

Introduction to lithography including stone, plate, and photographic processes. Contemporary viewpoints and their relationship to traditional printmaking, with emphasis on individual image development. (Studio 6) Pre: 231.

### 334 Relief Printing and Typography II (3)

Continuation of 233. Applications of previous studies to experimental workshop assignments leading to production of book pages, folders, posters, and other visual material incorporating type and print in a contemporary idiom. (Studio 6) Pre: 233 or permission of chairperson. May be repeated for credit with permission of instructor.

### 337 Printmaking III (3)

Continuation of 332 with semi-independent work in various printmaking media. Introduction of aluminum plate and photo-lithography. (Studio 6) Pre: 332.

### 344 Sculpture II (3)

Continuation of 243. (Studio 6) Pre: 243 or permission of instructor. May be repeated for a maximum of 6 credits with permission of instructor.

### 404 Digital Art and Design IV (3)

Independent work in digital art and design under the supervision of instructor. Students present project proposals and are guided in the development of a professional multimedia portfolio. (Studio 6) Pre: 306 and permission of instructor and department chair. May be repeated once with permission of the instructor and department chairperson.

**405, 406 Studio Seminar (3 each)**

Intensive self-directed work under guidance of instructor. Periodic critiques and discussion of work of all participants. (Studio 6) Pre: Limited to senior B.A. and B.F.A. studio art majors with 3.00 or above as studio course average and permission of instructor.

**410 Drawing IV (3)**

Independent work in drawing under the supervision of instructor. (Studio 6) Pre: 309 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**415 Photography III (3)**

Independent work in photography under the supervision of instructor. (Studio 6) Pre: 314 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**417 Video and Filmmaking III (3)**

Independent work in video and filmmaking under the supervision of instructor. (Studio 6) Pre: 316 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**423 Painting III (3)**

Independent work in painting under the supervision of the instructor. (Studio 6) Pre: 322 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**435 Relief Printing and Typography III (3)**

Independent work in relief printing and typography under the supervision of instructor. (Studio 6) Pre: 334 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**438 Printmaking IV (3)**

Independent work in printmaking media under supervision of instructor. (Studio 6) Pre: 337 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**445 Sculpture III (3)**

Independent work in sculpture under the supervision of instructor. (Studio 6) Pre: 344 and permission of instructor. May be repeated for credit with permission of instructor and department chair.

**501 Graduate Studio Seminar (3)**

Intensive independent studio work under guidance of instructors. Periodic critiques and discussions related to work of all participants in the course. (Studio 6) Pre: 48 credits in studio.

**Art History (ARH)**

Chairperson: Professor Pagh

**120 Introduction to Art (3)**

Fundamental principles of the visual arts, evolution of styles and conceptions through the ages in different forms of creative expression. (Lec. 3) (A) [D]

**251 Introduction to Art History:****Ancient-Medieval (3)**

The development of architecture, sculpture, and painting from prehistory through the Middle Ages. (Lec. 3) (A) [D]

**252 Introduction to Art History:****Renaissance-Modern (3)**

The development of architecture, sculpture, and painting from the early Renaissance to the present. (Lec. 3) (A) [D]

**284 Introductory Topics in Architectural History (3)**

Consideration of the history of architecture and city planning through surveys of selected periods and themes. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor

**285 Women in Art (3)**

Survey of images of women throughout the history of art in Europe and America; investigation of the roles of women as patrons and artists in art history. (Lec. 3)

**300 Art History Internship (3-6)**

Internship in an approved professional organization (such as museum, gallery, preservation society, auction house). Specific details determined in consultation with faculty supervisor and off-campus liaison, and approved by chairperson. (Practicum) May be taken in one semester or repeated for a maximum of 6 credits. S/U only.

**330 African-American Art in Context: A Cultural and Historical Survey I**

See African and African-American Studies 330. Next offered spring 2009.

**331 The African-American Artist in Context: A Cultural and Historical Survey II**

See African and African American Studies 331.

**354 The Art of Greece and Rome (3)**

Developments in architecture, painting, and sculpture in Greece and Rome from 800 B.C. to 400 A.D. Brief analysis of the art of the Aegean from 2500 to 1500 B.C. (Lec. 3) Pre: 251 or permission of chairperson.

**356 Medieval Art (3)**

Painting, sculpture, architecture, and minor arts of the Middle Ages from 500 to 1400 in Western Europe. (Lec. 3) Pre: 251 or permission of chairperson.

**359 Baroque Art (3)**

Developments in painting, sculpture, and architecture in Italy and northern Europe from 1600 to 1750. (Lec. 3) Pre: 251 or 252 or permission of instructor.

**363 Modern Art: 19th and 20th Centuries (3)**

A survey of trends in the visual arts over the last two centuries with emphasis on defining a "modern" aesthetic. Painting, sculpture, performance, concep-

tual, and related arts will be discussed. (Lec. 3) Pre: 251 or 252 or permission of instructor.

**364 American Art (3)**

Painting, sculpture, and architecture from their origins in the 17th century to the present; emphasis on the 19th century. (Lec. 3) Pre: 251 or 252.

**365 Renaissance Art (3)**

Painting, sculpture, and architecture of Italy and northern Europe from 1400 to 1600. (Lec. 3) Pre: 251 or 252 or permission of instructor.

**371, 372 Projects in Art History I, II (3 each)**

Directed study in art history under guidance of instructor selected by student. The student may select a different instructor for 371 and 372. (Independent Study) Pre: permission of chairperson and instructor.

**374 Topics in Film (3)**

Explores the social, historical, and aesthetic development of the cinema from 1895 to the present. Lectures (3 hours) and required film screenings. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor.

**375 Topics in the History of Photography (3)**

Explores the social, historical, and aesthetic development of photography from 1826 to the present. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor.

**376 History of Animation (3)**

Traces the development of animation from the pre-history of animation to the present. (Lec. 3) Pre: 251, 252, or permission of instructor.

**377 The History of Experimental Film (3)**

Traces the development of experimental cinema in the context of modern art. (Lec. 3) Pre: 251, 252, or permission of instructor. Next offered fall 2008.

**380 Topics in Art and Architectural History (3)**

Selected topics, themes, and issues in the history of the visual arts. (Lec. 3) Pre: 251 or 252 or permission of instructor. May be repeated with a different topic for maximum of 6 credits.

**461 Topics in Methods, Theory, and Criticism (3)**

Art history methods or selected topics in the theory and criticism of art. (Lec. 3) Pre: permission of chairperson. May be repeated for credit with permission of instructor.

**462 Contemporary Art Seminar (3)**

Analysis of contemporary work and its relation to earlier movements. (Seminar) Pre: 363. May be repeated for a maximum of 6 credits with permission of instructor. Next offered fall 2008.

**465 (or APG 465) Seminar in Cultural Heritage (3)**

Investigates how global development, commercialization, and conflicts affect humankind's cultural heritage. Examines some ethical issues and legal strategies for protecting cultural sites, artifacts, and traditional folkways. (Lec. 3) Pre: at least 3 credits at

the 300-level in anthropology, art history, or history; or permission of the instructor.

**469, 470 Art History: Senior Projects (3-6 each)**

Intensive, independent work on a project determined by consultation with the student's project advisor. (469, Independent Study; 470, Tutorial) Pre: senior standing, art history major, permission of chairperson.

**475 Classical Archaeology: Critical Approaches to the Greek and Roman Past (3)**

Study of material remains of ancient Greek and Roman (and related) cultures. Critical analysis of art, artifacts, and architecture with attention to changing approaches to interpreting antiquity. (Seminar) Pre: at least 3 credits at the 300-level in art history, history, or anthropology; or permission of instructor.

**480 Advanced Topics in European and American Art (3)**

Consideration of the history of European and American art through analysis of selected periods or themes. (Seminar) Pre: permission of instructor. May be repeated for credit with a different topic. Spring 2008: The Architectural Heritage of the University Campus.

**565 (or APG 565) Seminar in Cultural Heritage (3)**

Investigates how global development, commercialization, and conflicts affect humankind's cultural heritage. Examines some ethical issues and legal strategies for protecting cultural sites, artifacts, and traditional folkways. (Lec.) Pre: 300-level coursework in anthropology, art history, or history; or permission of instructor.

**575 Classical Archaeology: Critical Approaches to the Greek and Roman Past (3)**

Study of material remains of ancient Greek and Roman (and related) cultures. Critical analysis of art, artifacts, and architecture with attention to changing approaches to interpreting antiquity. (Seminar) Pre: coursework at the 300-level in art history, history, or anthropology, or permission of instructor.

**Astronomy (AST)**

*Chairperson:* Professor Northby

**108 Introductory Astronomy (3)**

Celestial sphere, earth as an astronomical body, sun, motions and characteristics of members of solar system, constellations, constitution of stars and nebulae. Planetarium used freely for lectures and demonstrations. (Lec. 3) (N)

**334 Optics**

See Physics 334.

**483, 484 Laboratory and Research Problems in Physics**

See Physics 483, 484.

**491, 492 Special Problems**

See Physics 491, 492.

**Bachelor of General Studies (BGS)**

*Coordinator:* A. Hubbard

**100 Pro-Seminar (3)**

Introduction to critical approaches to learning with emphasis on reading and rhetorical skills appropriate to college students. Must be taken concurrently with URI 101. S/U credit. (ECw)

**350 Directed Study or Research (1-6)**

Directed research or study designed to meet the particular needs of individual students. (Independent Study) Pre: permission of the academic department chairperson and the B.G.S. coordinator. May be repeated for a maximum of 6 credits.

**390 Social Science Seminar (6)**

Exploration of the social sciences for B.G.S. students who have completed the Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of B.G.S. students. Next offered fall 2007. (S) [D]

**391 Natural Science Seminar (6)**

Exploration of the natural sciences for B.G.S. students who have completed the Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of B.G.S. students. Next offered spring 2008. (N)

**392 Humanities Seminar (6)**

Exploration of the humanities for B.G.S. students who have completed their Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of B.G.S. students. Next offered fall 2008. (L) [D]

**397 Human Studies Major Seminar (3)**

Capstone course of human studies major. Review and assessment of students' major education through intensive exploration of issues central to human studies. (Seminar) Pre: completion of 30 credits of major. Required of B.G.S. human studies majors.

**398 Applied Communication Major Seminar (3)**

Capstone course of applied communications major. Review and assessment of students' major education through intensive exploration of issues central to professional communications. (Seminar) Pre: completion of 30 credits of major courses. Required of all applied communication majors.

**399 Supervised Senior Project (3)**

A project chosen by the student with faculty guidance on a topic relevant to the student's major, resulting in a paper or other demonstration of academic achievement. (Independent Study) Pre: senior standing in B.G.S. program and approval of advisor and B.G.S. coordinator. Required of B.G.S. students.

**Biochemistry (BCH)**

*Chairperson:* Professor Sperry

**190 Issues in Biotechnology (3)**

See Aquaculture and Fisheries Science 190. (N)

**242 (342) Human Genetics and Human Affairs (3)**

Basic principles of genetics including patterns of inheritance, mitosis and meiosis, sex determination and sex linkage. Genetic diseases, their cause and cures. Recombinant DNA and genetic engineering. Human diversity and evolution. (Lec. 3)

**311 Introductory Biochemistry (3)**

Chemistry of biological transformations in the cell. Chemistry of carbohydrates, fats, proteins, nucleic acids, enzymes, vitamins, and hormones integrated into a general discussion of the energy-yielding and biosynthetic reactions in the cell. (Lec. 3) Pre: CHM 124 or equivalent.

**312 Introductory Biochemistry Laboratory (2)**

Laboratory exercises illustrate chemical and physical properties of biomolecules, separation techniques, enzyme catalysis, symptoms of nutritional deficiency, quantification of metabolic end-products, and drug detoxification. (Lab. 4) Pre: credit or concurrent enrollment in 311.

**352 General Genetics**

See Biological Sciences 352.

**353 (or BIO 353) Genetics Laboratory (1)**

Basic principles and concepts of genetics demonstrated with microorganisms, plants and animals. (Lab. 2) Pre: credit or concurrent enrollment in 352.

**412 Biochemistry Laboratory (3)**

Same as 312 plus an individual supervised laboratory project selected in consultation with the student. Projects may include enzyme action, enzyme induction, drug action, use of radioisotopes, and plant metabolism. (Lab. 6) Pre: credit or concurrent enrollment in 311.

**437 Fundamentals of Molecular Biology**

See Biological Sciences 437.

**451 Laboratory in Cell Biology**

See Biological Sciences 451.

**452 (or BIO 452) Advanced Topics in Genetics (3)**

More detailed treatment of topics introduced in the general genetics course (352) including aspects of transmission genetics, molecular genetics, cytogenetics, biotechnology, developmental genetics, and the impact of genetics on society. (Lec. 3) Pre: BIO 352.

**453 Cell Biology**

See Biological Sciences 453.

**454 Genetics Laboratory**

See Biological Sciences 454.

**464 Biochemistry of Metabolic Disease (3)**

A study of the primary and secondary molecular changes in human metabolic diseases. Topics include aging, alcoholism, arteriosclerosis, diabetes, depression, and genetic diseases. (Lec. 3) Pre: 311 or 481.

**484 Physical Methods in Biochemistry (3)**

Experimental methods including spectroscopy, spectrofluorimetry, optical rotation, chromatography, and electrophoresis are applied to biochemical compounds and reactions. Physical principles and the calculation of important properties are stressed. (Lec. 1, Lab. 4) Pre: 435, 481, and permission of chairperson.

**491, 492 Research in Biochemistry (1–6 each)**

Special problems. Student outlines the problem, carries on experimental work, presents the conclusions in a report. (Independent Study) Pre: permission of instructor. Not for graduate credit in biochemistry.

**495, 496 Biochemistry Seminar (1 each)**

Discussion and presentation of research papers on selected subjects in biochemistry. (Lec. 1) Pre: 311, 482, or 582.

**500 Principles and Techniques in Molecular Cloning (II, 2)**

Current techniques and strategies in gene cloning, characterization, construction, and expression in prokaryotes and eukaryotes. Comprehensive knowledge and understanding necessary for gene cloning and vector construction emphasized (Lec. 2). Pre: 437 or permission of instructor.

**502 Techniques of Molecular Biology**

See Microbiology 502.

**503 Electron Microscopy**

See Microbiology 503.

**505 Laboratory in Electron Microscopy**

See Microbiology 505.

**508 Seminar in Biological Literature**

See Biological Sciences 508.

**521 Physical Biochemistry (3)**

The use of calorimetry, centrifugation, electrophoresis, (SDS-PAGE, agarose gels, sequencing gels, immunoelectrophoresis, capillary electrophoresis, and isoelectric focusing), chromatography (GFC, SPX, IEX, normal and reversed-phase HPLC, and micro-HPLC), mass spectrometry (ion-labeling, MALDI, FAB, electrospray, and MS/MS), radioactive labels, and X-ray crystallography to characterize biologically important macromolecules such as proteins, DNA/RNA, carbohydrates, and lipids. (Lec. 3) Pre: 311, concurrent registration in 581, or permission of instructor. In alternate years. Next offered fall 2007.

**522 Bioinformatics I**

See Computer Science 522.

**523, 524 Special Topics in Biochemistry (1–3 each)**

Advanced work arranged to suit the individual needs of the student. Lecture and/or laboratory according to the nature of the problem. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. S/U credit for 524.

**551 (or MTC 551) Topics in Biochemistry for the Clinical Scientist (3)**

Description of the major components of biochemistry as it relates to the medical sciences. Major concepts include molecular genetics, regulatory biochemistry, and medically related applied biochemistry. (Lec. 3) Offered every third year.

**552 Microbial Genetics**

See Microbiology 552.

**572 Plant Biochemistry**

See Plant Sciences 572.

**573 Developmental Genetics**

See Biological Sciences 573.

**579 Advanced Genetics Seminar**

See Biological Sciences 579.

**581 General Biochemistry I (3)**

First semester of a two-semester course on the principles of biochemistry. Topics include bioenergetics, protein structure, enzymology, glycolysis, the tricarboxylic acid cycle, and oxidative phosphorylation. (Lec. 3) Pre: CHM 228 and 229.

**582 General Biochemistry II (3)**

Second semester of a two-semester course on the principles of biochemistry. Topics include photosynthesis, membranes, hormones, metabolism, the biosynthesis of DNA, RNA, and proteins. (Lec. 3) Pre: 581 or permission of instructor.

**585 Recent Advances in Receptor Research (1)**

Discussion of current research literature about receptors for hormones, pheromones, neurotransmitters, and other biological signals. Consequences of receptor activation will also be discussed. (Lec. 1) Pre: 311 and permission of instructor. May be repeated.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**642 Biochemical Toxicology**

See Biomedical and Pharmaceutical Sciences 642.

**651, 652 Research in Biochemistry (3 each)**

Students are required to outline a research problem, conduct necessary literature survey and experimental work, and present the observations and conclusions in a substantial written report. (Independent Study) Pre: graduate standing.

**695, 696 Graduate Seminar**

See Microbiology 695, 696.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Biological Sciences (BIO)**

*Chairperson: Professor Goldsmith*

**101 Principles of Biology I (4)**

Chemistry, structure, metabolism, and reproduction of cells. Principles of genetics. Structure, development, and physiology of animals. Survey of the animal kingdom. (Lec. 3, Lab. 2) (N)

**102 Principles of Biology II (4)**

Structure, physiology, and reproduction of plants. Diversity of plants, fungi, and algae. Principles of ecology and evolution. (Lec. 3, Lab. 2) Pre: 101. (N)

**105 Biology for Daily Life with Laboratory (3)**

Basic biological principles needed to understand contemporary issues in biology, for example, forensic biology, cloning, genetic engineering, reproductive technologies, "alternative" medicine, biodiversity, habitat alteration, and endangered species. Designed for nonmajors. (Lec. 2, Lab. 2) (N)

**106 Biology for Daily Life with Recitation (3)**

Basic biological principles needed to understand contemporary issues in biology, for example, forensic biology, cloning, genetic engineering, reproductive technologies, "alternative" medicine, biodiversity, habitat alteration, and endangered species. Designed for nonmajors. (Lec. 2, Rec. 1) (N)

**121 Human Anatomy (4)**

Elementary anatomy of the organ systems, studies with the aid of charts, models, and predissected specimens. (Lec. 3, Lab. 3) Open to B.A. biology, B.S. biological sciences, physical education, nursing, pharmacy, pre-physical therapy, clinical lab science, nutrition, dietetics, and biomedical engineering majors only.

**130 Topics in Marine Biology (1)**

Current and classical issues considered in small classes. Designed for students interested in marine biology. (Seminar) Pre: Limited to marine biology majors. Required of all freshman marine biology majors and students entering the major with fewer than 24 credits. May not be repeated.

**201 General Animal Physiology (3)**

Basic principles of physiology with emphasis on cellular and membrane mechanisms. Topics include bioenergetics and metabolism, enzymes, respiratory functions of blood cells, osmoregulation, bioelectricity and motility, cellular responses to humoral stimuli. (Lec. 2, Lab. 3) Pre: two semesters of biological sciences and one semester of chemistry recommended.

**242 Introductory Human Physiology (3)**

Functions of the organ systems of the human body and their coordination in the whole human organism. Attention is given to the needs of students preparing for health-related professions. (Lec. 3) Pre: 121. Not open to students with credit in 442.

**244 Introductory Human Physiology Laboratory (1)**

Mechanisms of physiological processes are illustrated by experiments on vertebrate animals. (Lab. 3) Pre: credit or concurrent enrollment in 242.

**250 (or GEO 250) Evolution (4)**

Introduction to evolution as the unifying thread in the biosphere. Processes and patterns discussed, including microevolution and macroevolution. Social impact of evolution discussed from a biological perspective. Pre: GEO 102 or one semester of biological sciences, or permission of instructors.

**262 Introductory Ecology (3)**

Structure and function of ecosystems, limiting factors, population dynamics, population interactions, and community relationships. Selected habitats and general ecological effects of humans. (Lec. 3) Pre: 101, 102 or equivalent.

**286 (or ENT 286) Humans, Insects, and Disease (3)**

Role of insects, ticks, and mites as vectors and as direct agents of diseases in humans; factors affecting the spread of these diseases and their role in our cultural development. (Lec. 3) Not for major credit for B.S. in biological sciences. (N)

**301 Physiological Experiments (3)**

Methods of investigating physiological problems in the laboratory. Topics and techniques will be presented briefly, then employed in an individual laboratory project. (Lab. 6) Pre: 201 and 302.

**302 Animal Development (4)**

Survey of the patterns and mechanisms of animal development, including the molecular genetic control of development, medical developmental biology, and evolution of development. (Lec. 3, Lab. 3) Pre: 101, 102, and two additional semesters of biological sciences; genetics recommended.

**304 Comparative Vertebrate Anatomy (4)**

Anatomy of chordates emphasizing functional and evolutionary diversity. Lecture focuses on morphological variation and evolution. Laboratory focuses on comparative anatomy through dissections and models. (Lec. 3, Lab. 3) Pre: 101 and 102 or equivalent.

**311 Plant Structure and Development (4)**

Structure of vascular plant cells, tissues, and organs; cellular and molecular mechanisms controlling developmental processes including cell division, leaf initiation, epidermal patterning, and vascular dif-

ferentiation. (Lec. 2, Lab. 3) Pre: 102 or permission of instructor.

**321 Plant Diversity (3)**

Representative forms of prokaryotes, algae, fungi, bryophytes, and vascular plants with emphasis on evolution, ecology, and life cycle. (Lec. 2, Lab. 3) Pre: 102 or permission of instructor.

**323 Field Botany and Taxonomy (4)**

Collection, identification, and study of vascular flora of Rhode Island, including use of manuals and herbarium specimens. Field trips throughout Rhode Island. Discussion of principles, methods, and data used in classification. (Lec. 2, Lab. 4) Pre: 102.

**327 Vertebrate Histology (3)**

A study of the normal microscopic organization of the cells and tissues that compose the organ systems of vertebrates. An introduction to histochemical and cytochemical methods is included. (Lec. 3) Pre: one year of biological sciences and one semester of organic chemistry.

**329 Vertebrate Histology Laboratory (1)**

A detailed study in the laboratory of prepared microscope slides of cells and tissues of vertebrates. (Lab. 3) Pre: credit or concurrent enrollment in 327.

**332 (or PLS 332) Plant Pathology (4)**

Nature, cause, and control of plant diseases. Use of basic techniques for identification of major types of plant diseases and their causal agents. (Lec. 4) Pre: 102 or permission of instructor.

**334 Physiology of Exercise**

See Kinesiology 334.

**335 Physiology of Exercise Laboratory**

See Kinesiology 335.

**341 Principles of Cell Biology (3)**

An introduction to the structure and organization of eukaryotic cells. Topics include membranes and organelles, gene expression, protein synthesis and secretion, energy utilization, the cytoskeleton, and signal transduction. (Lec. 3) Pre: one semester of biological sciences and one semester of organic chemistry.

**345 Marine Environmental Physiology (3)**

The physiological basis of adaptation to the marine environment. Physiological methods adapted to marine plants and animals. (Lec. 2, Lab. 3) Pre: Two semesters of biological sciences.

**346 Plant Physiology (3)**

Development and function of vascular plants, including energy and nutrient assimilation, growth, reproduction, and interactions with other organisms and the physical environment. (Lec. 3) Pre: 102, one semester of chemistry, or permission of instructor.

**348 Plant Physiology Laboratory (1)**

Laboratory methods in plant physiology, including experimental design and reporting. Techniques

include water potential measurement, chromatography, spectrophotometry, enzyme assay, tissue culture, bioassay, protein extraction, and gel electrophoresis. (Lab. 3) Pre: 346, may be taken concurrently.

**352 (or BCH 352) General Genetics (4)**

Introduction to basic genetic principles and concepts leading to an understanding of genes, heredity, and the nature of inherited variation. Applications and implications for animals, plants, fungi, and bacteria. (Lec. 3, Rec. 1) Pre: 101 and 102.

**353 Genetics Laboratory**

See Biochemistry 353.

**354 Invertebrate Zoology (4)**

Study of the origin and evolutionary relationship of the invertebrate animals. Emphasis on marine forms. Laboratory sessions include comparative study of selected examples and field trips to local environments. (Lec. 2, Lab. 4) Pre: 101 and 102.

**355 Marine Invertebrates of Southern New England (3)**

Collection and identification of marine invertebrates of southern New England. Emphasis on field and laboratory studies. Student collection will incorporate video photography. (Lab. 6) Pre: 101 and 102 or permission of instructor.

**360 Marine Biology (4)**

The nature of plants and animals of the sea. Diversity of species and adaptations to habitats from the sea surface to the depths of the ocean. (Lec. 3, Lab. 3) Pre: 101, 102.

**366 Vertebrate Biology (3)**

Life histories, adaptations, ecology, classifications, and distribution of vertebrate animals. Laboratory and extensive field work on local vertebrates. (Lec. 2, Lab. 3) Pre: 262 recommended.

**385 Introductory Entomology**

See Entomology 385.

**386 Introductory Entomology Lab**

See Entomology 386.

**396 Biology and Society (2)**

A seminar course dealing with the impact of biological discoveries on societal questions and with the social influences that affect biological discovery. Discussion of original papers, magazines, newspaper articles, and books about various discoveries. (Seminar) Pre: three courses in biology (including current enrollment) or permission of instructor.

**397, 398 Colloquium in Biological Sciences (0 each)**

Introduction to modern scholarly work in biology. Lectures by visiting and resident scholars, with questions from the audience. Expected of students enrolled in the biology honors program. (Lec.) Pre: open to biological sciences majors only. S/U only.

**418 Ecology of Marine Plants (4)**

Ecology, development, and physiology of marine algae and higher plants. Topics include competition, herbivory, nutrient uptake, photosynthesis, and growth. (Lec. 3, Lab. 3). Pre: 102, 262 or permission of instructor. In alternate years.

**432 Mycology: Introduction to the Fungi (4)**

Structure, development, cytology, distribution, and identification of fungi, with consideration of their importance in industry, medicine, plant disease, and organic decomposition. (Lec. 2, Lab. 4) Pre: 102; 321 recommended.

**437 (or BCH 437) Fundamentals of Molecular Biology (3)**

Biochemical basis of heredity as seen through the structure and function of nucleic acids. Includes DNA replication, transcription, translation, gene regulation, and gene organization in prokaryotes and eukaryotes. Current methods emphasized. (Lec. 3) Pre: MIC 211, BIO 352, and BCH 311, or permission of instructor.

**441 Environmental Physiology of Animals (3)**

The dynamics of the interaction of animal functions with the environment. Emphasis on quantitative study of physiological adaptations to environmental fluctuations. (Lec. 3) Pre: 201 or equivalent.

**442 Mammalian Physiology (3)**

Intensive study of the physiological mechanisms that regulate the animal body and its organ systems. Emphasis on knowledge obtained from experimental physiology. Class discussion of applied physiology. (Lec. 2, Rec. 1) Pre: one semester each of anatomy and physiology courses or permission of instructor.

**444 Experimental Physiology (1)**

Introduction to non-invasive research methods in physiology. Emphasis on experimental design, recording and analyzing data, and use of laboratory notebooks in writing for publication. (Lab. 3) Pre: one semester each of anatomy and physiology courses or permission of instructor.

**445 Endocrinology I (3)**

Comparative approach to the endocrine regulation of the organism and to the molecular basis for hormone action. (Lec. 3) Pre: BCH 311 or equivalent and BIO 201 or 242 or equivalent. In alternate years.

**446 Introduction to Cellular and Behavioral Neurobiology (3)**

Basic principles of excitable cell function. Emphasis will be on cellular and membrane mechanisms as they relate to behavior (Lec. 3) Pre: an animal physiology course; one semester of calculus, physics, or biochemistry is strongly recommended or permission of instructor. Next offered spring 2008. Not for graduate credit.

**451 (or BCH 451 or MIC 451) Laboratory in Cell Biology (1)**

Analysis of subcellular processes, structures, and molecules using techniques including gel electrophoresis, spectrophotometry ultracentrifugation, and protein purification. Topics range from analysis of gene expression to subcellular localization of enzymatic activity. (Lab. 2) Pre: concurrent enrollment in 453 (or MIC 453) or permission of instructor.

**452 Advanced Topics in Genetics**

See Biochemistry 452.

**453 (or BCH 453 or MIC 453) Cell Biology (3)**

Structure, replication, and function of eukaryotic cells at subcellular level. Topics considered include cell membranes, cytoplasmic organelles and nuclei, cell division, cellular differentiation, and methods. Emphasis on recent publications. (Lec. 3) Pre: two semesters of biological sciences, BCH 311, junior standing, or permission of instructor.

**455 Marine Ecology (3)**

Investigation of the structure and dynamics of various marine ecosystems. Includes mineral cycling, energy flow, community and population organization, and behavioral ecology in selected marine environments. (Lec. 3) Pre: 262 or permission of instructor.

**457 Marine Ecology Laboratory (1)**

Field and laboratory work on community relationships of dominant organisms in Rhode Island marine environments. (Lab. 3) Pre: concurrent enrollment in 455. Limited to 15 students.

**458 Freshwater Ecology (4)**

Interactions among physical, chemical, and biological processes that affect distribution and abundance of freshwater organisms (Lec. 3, Lab. 3) Pre: 206 or 262 and one semester of chemistry.

**465 Biology of Algae (4)**

Taxonomy, morphology, and evolution of all major algal divisions. Laboratory/field component focuses upon taxonomic identification of both live and preserved microscopic and macroscopic algal species. (Lec. 3, Lab. 3) Pre: 102. In alternate years.

**467 Animal Behavior (3)**

Ethology and sociobiology of animals. Topics in the control and development of behavior patterns, orientation in time and space, social behavior, and behavioral ecology. (Lec. 3) Pre: two semesters of biology; 262 recommended.

**469 Tropical Marine Invertebrates (5)**

Systematic survey of tropical invertebrates. Emphasis on examples from Bermuda's marine environment. Laboratory includes field collections, identification and preparatory techniques for taxonomic studies. (Practicum, Lab. 8) Taught in Bermuda. Pre: 101 and 102, junior standing, snorkeling experience.

**475 Coral Reef Ecology (5)**

Structure and function of coral reef ecosystems with emphasis on the biology of corals. Laboratory sessions focus on field surveys and research techniques. (Practicum, Lab. 8) Taught in Bermuda. Pre: 262 and junior standing; SCUBA certification required.

**491, 492, Independent Biological Research (1-3 each)**

Individualized laboratory, field, or literature research projects. May be repeated for a total of 6 credits. Pre: open only to undergraduates on arrangement with staff. S/U only.

**495 Tropical Marine Biology Research (6)**

Independent marine research in Bermuda. Topics may include marine ecology, physiology, systematics, etc. Proposal, oral report, and project paper required. (Practicum, Lab. 12). Taught in Bermuda. Pre: junior standing 475, 469.

**505 Biological Photography (3)**

Application of scientific photography to biological subjects, living and prepared. Photomacrography. Principles of photography as applied to the specialized needs of biological research and publication. (Lec. 1, Lab. 5) Pre: permission of instructor.

**508 (or BCH/MIC/AFS/AVS/NRS/PLS 508) Seminar in Biological Literature (1)**

Survey of biological literature including traditional methods of bibliographic control, contemporary information retrieval services, and the development of a personalized information system. (Lec. 1) Pre: graduate standing or permission of the instructor.

**511 Special Readings in Developmental Plant Anatomy (3)**

Intensive tutorial work, research, and reading on ontogeny of plant structures and morphogenetic mechanisms. (Independent Study) Pre: graduate standing and permission of instructor. Concurrent audit of 311 required. Offered on demand.

**513 Functional Morphology (3)**

Advanced study of the evolution and biological role of organismal structure including critical evaluation of recent research in functional morphology with an emphasis on vertebrates. (Lec. 3) Pre: graduate standing; 304 or 366 recommended.

**515 Light Microscopy Research Methods (4)**

Introduction to optical techniques and biological specimen preparation for light microscopy with emphasis on application of these methods in biological research. Topics include optics, embedding and sectioning, fluorescence and immunocytochemistry, and computer image analysis. (Lec. 1, Lab. 6) Pre: graduate standing or permission of instructor.

**521 Recent Advances in Cell and Molecular Biology**

See Microbiology 521.

**524 Methods in Plant Ecology (3)**

Methods in analysis of vegetation and microenvironments. Emphasis on quantitative techniques in analysis of vegetation, soil, and microclimate; techniques in physiological ecology. (Lec. 2, Lab. 3) Pre: 102 and 262 or equivalent; STA 412 recommended. In alternate years.

**536 Seminar in Plant Stress Physiology (1-2)**

Readings, discussion, and analysis of current literature with emphasis on biochemical and genetic aspects of responses. Students electing 2 credits will write review papers. (Seminar) Pre: one course in plant physiology and one course in biochemistry. In alternate years.

**541 Comparative Physiology of Marine Animals (3)**

Comparison of physiological mechanisms by which animals maintain life with emphasis on marine invertebrates. Responses to external environment mediated by receptors, nervous systems, effectors. Living control systems for muscular activity and circulation. (Lec. 3) Pre: one physiology course. In alternate years.

**545 Endocrinology II (3)**

Integration of cell and molecular processes with whole animal function. Hormones and their regulation, of early development, growth, metabolism, salt and water balance, adaptation to stress, reproduction, and behavior. (Lec. 3) Pre: graduate standing or permission of the instructor.

**546 Introduction to Neurobiology (2)**

Fundamental processes in neurobiology with emphasis on cellular and membrane mechanisms of nerve functioning. (Lec. 2) Pre: 201 and MTH 141. In alternate years.

**549, 550 Advanced Topics in Neurobiology (3 each)**

Published papers in selected aspects of neurobiology will be discussed. Representative topics include role of Ca++, c-AMP in the nervous system, gating currents learning at the cellular level, cellular rhythmicity. (Seminar) In alternate years.

**551 (or NRS 551) Seminar in Marine Ecology (1)**

Readings and discussion on current research involving ecological interactions of marine species. (Seminar) Pre: permission of instructor. May be repeated.

**560 Seminar in Plant Ecology (2)**

Recent topics and investigations pertinent to plant ecology. Library research, oral presentation of reports, and group discussions. (Seminar) Pre: 262 or equivalent or permission of instructor. May be repeated.

**561 Behavioral Ecology (3)**

The interaction of animal behavior, ecology, and evolution. Topics include predator-prey relationships, resource partitioning, competition, territoriality,

and reproductive behavior. Term project required. (Lec. 3) Pre: a course in animal behavior and a course in ecology. In alternate years.

**563 Ichthyology (3)**

Fishes of the world. Their structure, evolution, classification, ecology, and physiology. Emphasis on local marine and freshwater fauna. Several field trips. (Lec. 2, Lab. 3) Pre: 366.

**564 Elasmobranch Biology (3)**

Sharks, skates, rays, and chimeras of the world. Their structure, evolution, classification, ecology, and physiology. (Lec. 3) Pre: 366; graduate standing or permission of instructor.

**567 Natural Selection (3)**

Ideas and controversies concerning the action of natural selection. Maintenance of genetic variability, neutral mutation, levels of selection, recombination and sexual reproduction, and rates of evolution. (Lec. 2, Lab. 3) Pre: 262 and 352 or 206 or permission of instructor.

**568 Ornithology (2)**

Biology of birds with emphasis on the role of birds in biological research. Areas covered include systematics, evolution, physiology, ecology, and behavior. Discussion of current topics in ornithology. (Lec. 2) Pre: 466 or permission of instructor.

**572 (or ENT 586) Medical and Veterinary Entomology (3)**

Life history, classification, habits, and control of insects and other arthropods affecting human and animal health. Topics will include public health significance, vector-parasite interactions, and survey and research methodologies. (Lec. 1, Lab. 4) Pre: 385 or equivalent. In alternate years.

**573 (or BCH 573) Developmental Genetics (3)**

An examination of animal and plant model systems incorporating concepts of cell biology, physiology, molecular biology, and genetics to understand fundamental mechanisms regulating patterns of organismal development. (Lec. 3) Pre: introductory courses in genetics development, biochemistry, or molecular biology preferred.

**579 (or BCH 579) Advanced Genetics Seminar (1)**

Current topics in genetics, including cytological, ecological, molecular, physiological, population, quantitative, and radiation genetics. (Seminar) Pre: 352 and permission of instructor.

**581, 582 Biological Sciences Colloquium (1 each)**

Invited talks on selected research topics in selected areas related to biology. Required of graduate students majoring in biological sciences. (Seminar). Pre: graduate standing in the department of Biological Sciences. S/U credit.

**587 Seminar in Neurobiology (1)**

Current literature in the neurosciences will be surveyed. Topics include molecular and behavioral

electrophysiology, ultrastructure of excitable cells, receptor and pharmacological neurobiology of invertebrates and vertebrates. (Seminar) Pre: graduate standing or one advanced neuroscience course.

**591, 592 Independent Biological Research (1-6)**

Individualized laboratory, field, or literature research projects. May be repeated for a total of 6 credits. Pre: graduate standing, permission of instructor. S/U credit.

**593, 594 Special Topics in Biological Sciences (1-6)**

Selected areas pertinent to needs of individuals or small groups. Class, seminar or tutorial. Topics may include the following: biomechanics, cell biology, ecological morphology, functional morphology, ichthyology, molecular biology, morphology and mechanics, physiology, plant cell development, and zoology. May be repeated for a total of 6 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**641, 642 Seminar in Physiology (1-3 each)**

Reports and discussions on topics of current research in physiology. Subject matter adapted to meet interests of students. (Seminar) Pre: permission of instructor.

**654 Seminar in Ichthyology (2)**

Reading, library research, reports, and class discussion on problems of current research interest in the biology of fishes. (Seminar) Pre: 563 or permission of instructor. In alternate years.

**661 Phytoplankton Taxonomy**

See Oceanography 661.

**663 Phytoplankton Physiology**

See Oceanography 663.

**664 Phytoplankton Ecology**

See Oceanography 664.

**675 Advanced Ecology Seminars (2 each)**

Specialized and advanced areas of ecological research and theory, including biogeography, Pleistocene ecology, population dynamics, energy flow in ecosystems, and radiation ecology. (Seminar) Pre: permission of instructor.

**691 Biological Problems (1-6)**

Special work to meet the needs of individual students who are prepared to undertake special problems. (Independent Study) Pre: permission of chairperson. Open only to doctoral students.

**695 Graduate Seminar (1)**

Students to give seminar reports on their thesis research. Topics may also include professional development subjects, such as grant writing, presentation techniques, résumé writing, etc. (Seminar) Pre: graduate standing. S/U credit. May be repeated

for credit, but only 2 credits may be applied to the program of study.

#### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

#### 930 Workshop in Biology Topics for Teachers (0-3)

Especially designed for secondary school science teachers. Basic topics in biology from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

### Biomedical and Pharmaceutical Sciences (BPS)

*Chairperson:* Professor Chichester

#### 202 Maintaining Health in the Age of Chemicals (2)

Introduction for the general student to the potential hazards posed by drugs, food additives, and pollutants to the maintenance of health. (Lec. 2) Not for program credit for nursing or pharmacy majors in the third year or beyond.

#### 301 Dosage Forms I: Regulation of Drug Products and Biopharmaceutics (2)

Introduction to the regulation of drug products. Application of kinetics to stability, dissolution, absorption, and other biopharmaceutical process. Bioavailability and generic equivalence. (Lec. 2)

#### 303 Dosage Forms II: Solid and Solution Dosage Forms and Pharmaceutical Calculations (2)

Physicochemical properties of drug molecules and their effect on formulation, manufacturing, and administration of solid and solution products. Introduction to pharmaceutical calculations. (Lec. 2)

#### 305 Dosage Forms III: Disperse System, Sterile and Specialty Dosage Forms (2)

Physicochemical properties of drug molecules and their effect on formulation, manufacturing, and administration of Disperse System, Sterile and Specialty Dosage Forms. (Lec. 2)

#### 311 (or PHP 311) Foundations of Human Disease I: Immunoinflammatory Disease (2)

The pathogenesis, etiology, epidemiology, symptomatology, and diagnosis of immunoinflammatory and musculo-skeletal diseases. The pharmacology and medicinal chemistry of anti-inflammatory medications, immunosuppressives, and anti-rheumatic drugs. (Lec. 2) Pre: third-year standing or permission of instructor. Offered every fall.

#### 312 (or PHP 312) Foundations of Human Disease II: Central Nervous System Disease (2)

The etiology, pathogenesis, epidemiology, symptomatology, and diagnosis of diseases of the central nervous system. (Lec. 2) Offered every spring.

#### 313 Introduction to Medicinal Chemistry and Drug Metabolism (2)

Basic chemical knowledge for understanding drug-receptor interaction, biotransformation of drugs (Phase I [oxidation, reduction, hydrolysis] and Phase II [conjugation, addition] metabolism), and pro-drug concept. (Lec. 2) Pre: third-year standing or permission of instructor.

#### 318 Pharmacy Technology Laboratory (1)

Prescription processing and compounding techniques for pharmaceutical dosage forms. (Lab. 3) Pre: third-year standing or permission of instructor.

#### 321 Principles of Pharmacology and Autonomic Pharmacology (2)

Fundamental principles of drug action with emphasis on drug/receptor interactions. Mechanisms of action and medicinal chemistry of drugs that affect the autonomic nervous system. (Lec. 2) Pre: third-year standing or permission of instructor. Offered every fall.

#### 322 Pharmacology and Medicinal Chemistry of Drugs Acting on the Central Nervous System (2)

Neurologic agents in the brain; antidepressants, antipsychotics, sedative hypnotics, analgesics, anti-seizure medications, anti-dementia therapy, and anti-anxiety medications. (Lec. 2) Pre: third-year standing or permission of instructor. Next offered spring 2009.

#### 325 Principles of Drug Analysis (2)

Competency in understanding the molecular basis of drug analysis: neutralization, oxidation/reduction, enzymatic reactions, clinically relevant spectroscopic and chromatographic techniques. (Lec. 2) Pre: third-year standing or permission of instructor. Offered every spring.

#### 326 Pharmacology and Medicinal Chemistry Laboratory I (1)

Effects of drugs on physiological functions. Identification and quantification of drugs and their actions. (Lab. 3) Pre: third-year standing or permission of instructor. Offered every spring.

#### 333 Nursing Pharmacology (3)

Comprehensive course in nursing pharmacology that forms the basis for therapeutics. (Lec. 3) Pre: junior status, nursing students.

#### 352 Personal Cosmetics (3)

Formulation and manufacture of various types of personal cosmetics and toilet preparations. Examples of types studied are prepared in laboratory. (Lec. 2, Lab. 3) Pre: 324.

#### 403 Pharmacokinetics I (3)

Pharmacokinetics of drug distribution, metabolism, and elimination. Compartmental models, pharmacokinetic modeling, development of dosage regimens. (Lec. 3) Pre: fourth-year standing or permission of instructor.

#### 409 (or PHP 409) Foundations of Human Disease III: Infectious and Pulmonary Processes (2)

The etiology, pathogenesis, epidemiology, symptomatology, and diagnosis of infections and pulmonary diseases. (Lec. 2) Pre: fourth-year standing or permission of instructor. Offered every fall.

#### 410 (or PHP 410) Foundations for Human Disease

#### IV: Endocrinology, Gastroenterology, Hematology-Oncology, Molecular Genetics (4)

The etiology, pathogenesis, symptomatology, and diagnosis of diseases of endocrine, gastrointestinal, hematologic-oncologic, and genetic origin. (Lec. 4) Pre: fourth-year standing or permission of instructor. Offered every spring.

#### 411 Biostatistics II

See Statistics 411.

#### 416 Pharmacology and Medicinal Chemistry Laboratory II (1)

Pharmacologic principles relating to the modification of drug activity and toxicity. Clinical assays relevant to assessing drug effects. (Lab. 3) Pre: fourth-year standing or permission of instructor. Offered every fall.

#### 420 (or PHP 420) Biotechnology Products in Pharmacy (2)

Clinical, pharmaceutical, and economic impact of biotechnology products in pharmacy, including monoclonal antibodies, interleukins, human growth factors, antigens oligonucleotides, DNase, and interferons. (Lec. 2)

#### 421 Pharmacology and Medicinal Chemistry of Anti-infective and Respiratory Agents (2)

Chemistry, mechanism of action, sensitivity, resistance, and toxicity of anti-infective drugs, and an overview of antibacterial, antifungal, antiviral, anti-protozoal, respiratory drugs, and vaccines in current use. (Lec. 2) Pre: fourth-year standing or permission of instructor. Offered every fall.

#### 422 Endocrine, Gastrointestinal, and Biologic Drugs (2)

Mechanisms of action of drugs used to treat endocrine and gastrointestinal disorders. Biological and biotechnologic sources, isolation, design, and medicinal chemistry of biopolymer drugs. (Lec. 2) Pre: fourth-year standing or permission of instructor. Offered every spring.

#### 425 GMP's in the Manufacture of Pharmaceutical Products (3)

Application of current Good Manufacturing Practices to the manufacture and quality control of various pharmaceutical products. (Lec. 3) Pre: fourth year standing or permission of instructor. Not for graduate credit.

**436 (or PSY 436) Psychotropic Drugs and Therapy (3)**

Interaction of drug and nondrug therapy and of physiological and psychological origins of psychopathology. Intended for advanced undergraduate and graduate students interested in clinical psychology. (Lec. 3) Pre: any one of the following—BIO 101, 104B, 113, 121, PSY 381, or permission of instructor. Not for graduate credit.

**445 Natural Products and Biotechnological Drugs (3)**

Natural drug products of biological or biotechnological origin. Sources, process of isolation or production, and general fundamental properties. (Lec. 3) Pre: CHM 228; MIC 201 or equivalent.

**497, 498 Special Problems (1-5 each)**

Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) Pre: permission of chairperson. Not for graduate credit.

**504 Pharmacokinetics II (3)**

Applied pharmacokinetics, principles of clinical pharmacology, therapeutic drug monitoring, and dose individualization. (Lec. 3) Pre: 403, fifth year standing or permission of instructor. Offered every fall semester.

**510 (or PHP 510) Foundations of Human Disease V: Renal and Cardiovascular Diseases (2)**

The etiology, pathogenesis, epidemiology, symptomatology, and diagnosis of renal and cardiovascular diseases. (Lec. 2) Pre: fifth-year standing or permission of instructor. Offered every spring.

**515 (or PHP 515) Pharmacy Practice Laboratory I (1)**

Simulated practice sessions designed to develop the delivery of pharmaceutical care, including prescription processing, use of patient profiles, communication with patients and health care professionals, pharmaco-epidemiology, and physical assessment. (Lab. 3) Pre: fifth-year standing or permission of instructor.

**516 (or PHP 516) Pharmacy Practice Laboratory II (1)**

Simulated practice sessions designed to develop the delivery of pharmaceutical care, including prescription processing, use of patient profiles, communication with patients and health care professionals, pharmaco-epidemiology, and physical assessment. (Lab. 3) Pre: fifth-year standing or permission of instructor.

**518 (or PHP 518) Self-Care I (3)**

An overview of alternative therapies with an emphasis on self-care and natural medicine alternatives. Basic information as well as case studies. (Lec. 3) Pre: fifth-year standing or permission of instructor. Offered every fall.

**519 Self-Care II**

See Pharmacy Practice 519.

**520 Biomedical Sciences Journal Club (2)**

Critical reviews of current research reports in the field of biomedical sciences. The students will be evaluated on the basis of their effectiveness in organization, interpretation, and oral presentation, according to criteria already established in the department. (Lec. 3) Pre: good standing in the basic research track of the Pharm.D. program. Not for graduate credit.

**521 Cancer Chemotherapy and Toxicology (2)**

Pharmacology and medicinal chemistry of oncology drugs. Principles of toxicology. (Lec. 2) Pre: fifth-year standing or permission of instructor. Offered every fall.

**522 Pharmacology and Medicinal Chemistry of Cardiovascular and Renal Drugs (2)**

Mechanism of action, adverse effects, and therapeutic applications of drugs affecting cardiovascular and renal function. (Lec. 2) Pre: fifth-year standing or permission of instructor. Offered every spring.

**523, 524 Seminar (1 each)**

Seminar presentation of scientific literature on a selected topic in the biomedical sciences or on the status of students' research work. (Seminar) Required of all graduate students in the department, with a maximum of 1 credit allowed per year. May be repeated for a maximum of 1 credit per degree. S/U only.

**525 Experimental Techniques in Biomedical Sciences (4)**

Provides experience with a variety of techniques used in biomedical science research, including HPLC, NMR, polarimetry, biotransformations, solid-phase synthesis, cell fractionation, and isolation and purification of proteins. (Lab. 4)

**530 Drug Metabolism (3)**

Mechanisms of Phase 1 (oxidation, reduction, hydrolysis) and Phase 2 (conjugations and synthesis) of drug metabolism. (Lec. 3) Pre: BCH 581 or permission of instructor. Offered every spring.

**533 Medicinal Plants (3)**

Problems in drug plant chemotaxonomy with field work in the drug plant gardens. Emphasis is placed on certain alkaloid, glycoside and oil-yielding plants, weedicides and insecticides as related to measures for control. (Lec. 2, Lab. 3) Pre: 446 or equivalent.

**535 Pharmaceutical Biotechnology (3)**

Introduction to pharmaceutical biotechnology, including drug design, DNA sequencing, cloning, recombinant proteins, monoclonal antibodies, and drug-screening techniques. (Lec. 3) Pre: BCH 581 or permission of instructor.

**536 Biotechnology Product Evaluation and Development**

See Medical Technology 571.

**544 Forensic Toxicology (3)**

Theoretical and practical aspects of poisoning including the isolation and identification of toxic materials from pharmaceuticals, body fluids, and tissues. Isolation and identification of physiological fluids from stains, hairs, and tissue with application to forensic medicine. (Lec. 2, Lab. 3) Pre: permission of instructor.

**545 Applied Toxicology (2)**

A two-credit lecture course dealing with cases of common toxic syndromes caused by drug overdose or exposure to environmental agents. Antidotes/patient decontamination measures will be surveyed. Patient case studies will be discussed. (Lec. 2) Pre: 322, 455, 521 or permission of instructor.

**546 Advanced Toxicology (3)**

Toxic effects of selected drugs and other xenobiotics on physiological and biochemical processes. (Lec. 3) Pre: permission of instructor. Offered every third year. Next offered spring 2009.

**551 Chemistry of Natural Products (3)**

Introduction to chemistry of certain groups of natural products especially in relation to their chemotaxonomic position in plant classification. Topics limited to secondary metabolites; e.g., terpenoids, phenolic compounds, aromatic compounds, phytosterols, alkaloids. (Lec. 3) Pre: CHM 228 and 230. In alternate years. Next offered fall 2008.

**560 Fundamentals of Cosmetic Science (3)**

Study of the fundamentals of the function and behavior of skin, hair, and nails and their reactivity to cosmetic raw materials. Properties of cosmetic ingredients will also be addressed. (Lec. 3) Pre: permission of instructor.

**561 Basic Research in Cosmetic Science (2)**

Laboratory exercises in the form of individual projects designed to provide an understanding of the basic properties and behavior of skin, hair, and nails. Assessment of cosmetic product performance and the basic properties of cosmetic ingredients. (Lab.) Pre: permission of instructor.

**562 Cosmetic Product Formulation (2)**

Provides a basic understanding of cosmetic products, technology, and quality control; improves formulation skills with a particular emphasis on the application of new technological developments in cosmetic preparation. (Lab) Pre: permission of instructor.

**565 Pharmacokinetics (3)**

The principles and application of clinical pharmacokinetics for advanced pharmacy students. Developing, modifying, and evaluating dosage regimens. (Lec. 3)

**572 Neural Bases of Drug Action (3)**

Review of neuroanatomy, neurochemistry, and neurophysiology as they relate to drug action. (Lec. 3) Pre: 446 or equivalent or permission of instructor. Offered every third year. Next offered spring 2009.

**587 General Pharmacology (3)**

An introduction to principles of pharmacology and major drug categories, for graduate students and advanced undergraduate students in biological sciences. (Lec. 3) Pre: permission of instructor.

**597, 598 Special Problems (1-3 each)**

Special graduate student project assignments in research under the supervision of faculty. (Independent Study) Pre: graduate standing. May be repeated for a maximum of 6 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**621 Manufacturing Pharmacy I (2)**

Theory and practice in the manufacture of pharmaceuticals and the principles of operation of the equipment used for their production. (Lec. 2) In alternate years.

**622 Manufacturing Pharmacy II (3)**

Theories applied to the manufacture of pharmaceuticals with an emphasis on formulation considerations and principles of operation of equipment used for their production. (Lec. 3) Pre: 621. In alternate years.

**623 Manufacturing Pharmacy Laboratory (2)**

Practical application of the principles of all aspects of dose-form manufacture, including an emphasis on good manufacturing practices. (Lab.) Pre: credit or concurrent enrollment in 622.

**625 Advanced Physical Pharmacy (4)**

Theory and application of physical chemical principles to problems in pharmaceutical research, with emphasis on methods by which properties of new medicinal agents are determined. (Lec. 4) Pre: permission of instructor.

**626 Advanced Physical Pharmacy Laboratory (1)**

Laboratory exercises dealing with the physical-chemical principles used in the evaluation of pharmaceutical substances. (Lab. 4) Pre: permission of instructor.

**633 Biosynthesis (3)**

Biogenesis of medicinally active principles of biological origin. Emphasis given to organic acids, polysaccharides, glycosides, steroids, and certain nitrogenous compounds. (Lec. 3) In alternate years. Next offered spring 2009.

**635, 636 Pharmacognosy Techniques (3-4 each)**

Physical and chemical factors influencing growth and development of active principles of drug plants. Certain biological analyses of results are performed. (Lec. 1, Lab. 6-9)

**641 Biochemical Pharmacology (3)**

Theory and application of pharmacological studies at the cellular and subcellular levels and their significance to drug action in the intact organism. (Lec. 2, Lab. 3) Pre: permission of instructor. Offered every third year. Next offered fall 2008.

**642 (or BCH 642) Biochemical Toxicology (3)**

Biochemical and molecular aspects of chemically induced cell injury and chemical carcinogenesis. (Lec. 3) Pre: permission of instructor. Offered every third year. Next offered fall 2008.

**644 Cardiovascular Pharmacology (3)**

Cellular mechanisms of drug action as a basis for understanding therapeutic effects. Emphasis on current developments in antihypertensive, antiarrhythmic, antianginal, and cardiotonic drug research. (Lec. 3) Pre: permission of instructor. Offered every third year. Next offered spring 2010.

**660 Industrial Project (Pharmaceutics) (3)**

A research project directed by the major professor on a topic in industrial pharmacy. A report must be submitted to the department faculty. The project will normally be conducted off campus. (Lab.) Pre: graduate standing in pharmaceutics.

**670 Advanced Pharmacokinetics (2)**

Application of classical compartmental and noncompartmental analyses to drug absorption and disposition in linear and nonlinear systems. (Lec. 2) Pre: 535 or permission of instructor.

**691 Selected Topics in Medicinal Science (3)**

Covers the following special research topics of interest: (a) heterocyclic chemistry, (b) nucleoside antibiotics, (c) prodrugs and isosteres, (d) nucleosides and nucleotides—synthesis and biological function, and (e) nucleic acid targeted drug design. (Lec. 3) Pre: permission of instructor. May be repeated for a maximum of 9 credits.

**693, 694 Seminar (1 each)**

Seminar discussions including presentation of papers on selected topics in pharmacy. (Seminar) Required of all graduate students, with a maximum of 1 credit allowed per year. May be repeated for a maximum of 2 credits for M.S. candidates. May be repeated for a maximum of 5 credits for Ph.D. candidates.

**697, 698 Research in Biomedical and Pharmaceutical Sciences (1-3 each)**

Literature survey, laboratory work, and a detailed research report on one or more assigned topics. (Independent Study)

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Biomedical Engineering (BME)**

*Chairperson: Professor Boudreax-Bartels*

**464 Medical Imaging (3)**

Engineering and clinical applications of medical imaging systems including X-ray, computed tomography, radioisotope imaging, ultrasound, magnetic resonance imaging; picture archiving and communication system and medical image processing. (Lec. 3) Pre: senior standing in biomedical engineering or permission of instructor. Not for graduate credit. Not open to students who have credit in ELE 564.

**465 Medical Image Processing Laboratory (1)**

Development of medical imaging processing algorithms with graphical user interface in C++ under the Windows operating system; smoothing and sharpening filters, morphological filters, area measurement and edge tracer. (Lab. 1) Pre: senior standing in biomedical engineering or permission of instructor. Not for graduate credit. Not open to students who have credit in ELE 564.

**Business (BUS)**

*Dean: Professor Higgins*

**110 Business Computing Applications (3)**

Applications and concepts relevant to computers and management information systems, including communication, spreadsheet, word processing, and Internet software. (Lec. 3/Online) Pre: open only to students with BU code or permission of instructor.

**111 Introduction to Business Analysis and Applications (3)**

Selected mathematical tools and techniques for analysis of business and economic problems and as aids in decision-making. Topics from finite and modern mathematics and applied calculus. (Lec. 3) Pre: open only to students with BU code or permission of instructor. Algebra proficiency test required. (MQ)

**140 Introduction to Business (3)**

Nature, philosophy, objectives, and scope of the American business system. Emphasis on the interrelations of the functional areas. (Lec. 3) Not open to juniors and seniors in the College of Business Administration.

**201 Financial Accounting (3)**

Basic concepts and systems used in financial accounting for business organizations. (Lec. 3) Open only to students with more than 24 credits or permission of dean's office.

**202 Managerial Accounting (3)**

Basic techniques and systems used by management accountants in budgeting, cost accounting, cost analysis, and control. (Lec. 3) Pre: 201 or permission of instructor.

**210 Managerial Statistics I (3)**

General statistical methods used in the collection, presentation, analysis, and interpretation of statistical data. Includes frequency distribution, measures of central tendency and dispersion, probability theory, sampling distribution, central limit theorem, law of large numbers, estimation, and tests of hypothesis. Pre: 111 or MTH 131 OR MTH 141.

**211 Managerial Decision Support Systems (3)**

Methodologies and information technologies that support decision-making. Emphasis on the use of PC-based analytical software for solving managerial problems; case studies and group problem solving. (Lec. 3) Pre: 110 and 210.

**212 Managerial Statistics II (3)**

Additional data analysis techniques, including tests of independence and goodness of fit, regression, correlation, analysis of variance, time series, and index numbers. (Lec. 3) Pre: 210 or STA 308.

**301 Intermediate Accounting I (3)**

Theoretical aspects of accounting principles, emphasis on current and fixed assets and the corporate structure. (Lec. 3) Pre: 201 or permission of instructor.

**302 Intermediate Accounting II (3)**

Equity investments, liabilities, financial statements, cash flow, and disclosure issues within each of these topics. (Lec. 3) Pre: 301 and junior standing in a degree-granting college or permission of instructor.

**303 Cost Accounting (3)**

Cost and managerial accounting systems and concepts including cost allocation, actual and standard cost systems, cost and profit planning, and control systems. (Lec. 3) Pre: 202 and junior standing in a degree-granting college or permission of instructor.

**310 Applications of Microcomputer Software in Business (3)**

In-depth study of microcomputer software used in business applications. Emphasis on spreadsheets, data management, presentation graphics, and communication software. Student projects and microcomputer lab assignments required. (Lec. 3) Pre: 110.

**315 Legal and Ethical Environment of Business I (3)**

An introduction to the origins, framework, and concepts of the legal and ethical environment of business with emphasis on contractual relations. (Lec. 3) Pre: junior standing in a degree-granting college.

**316 Legal and Ethical Environment of Business II (3)**

Operations of the U.S. system of jurisprudence and ethics as it affects the law of contracts, sales, debtor-creditor rights, and business organizations. (Lec. 3) Pre: 315 and junior standing in a degree-granting college.

**317 (or COM 354) International Business Communications Exchange (3)**

Examination of effective international business communication. Use of worldwide email network to exchange views on business topics with counterparts abroad. (Lec. 3/Online) Pre: junior or senior standing or permission of instructor.

**320 Financial Management (3)**

An analysis of the investment and financing issues facing domestic and multinational business firms. (Lec. 3) Pre: ECN 201, BUS 202 and 211 or 212, and junior standing in a degree-granting college or permission of instructor. Proficiency test available.

**321 Security Analysis (3)**

Problems in investing funds from the point of view of individual and institutional investors. Particular attention is given to analysis of current investment theories and international implications. (Lec. 3) Pre: credit or concurrent enrollment in 320.

**322 Financial Institutions and Markets (3)**

Comprehensive analysis of financial institutions and the markets in which they operate. Emphasis on the internal operations of the institutions. (Lec. 3) Pre: ECN 201, BUS 202 and 211 or 212, or permission of instructor.

**323 Fundamentals of Real Estate (3)**

Analysis of real estate principles. An examination of land utilization, valuation, financing techniques, urban development, property rights, markets, and government regulation. (Lec. 3) Pre: ECN 201 and junior standing in a degree-granting college.

**335 Fundamentals of Risk Management and Insurance (3)**

Basic course in risk management and insurance. Emphasis on personal risk management and the personal lines coverages: homeowner's insurance, personal automobile insurance, and basic life insurance policies. (Lec. 3) Proficiency test available. Pre: junior standing in a degree-granting college

**336 Commercial Property and Liability Insurance (3)**

Analysis of commercial property and liability risk exposures and their related coverages. Coverage includes general property and liability insurance and specialized topics for marine, fidelity, surety, and professional liability exposure. (Lec. 3) Pre: 320 and junior standing in a degree-granting college.

**337 Life Insurance (3)**

Analysis of the many types of life insurance and health insurance contracts, computation of premiums and reserves, and contract interpretation. Included is an analysis of the uses of life insurance contracts. (Lec. 3) Note: This course is preparation for the Rhode Island state licensing examination in life and accident and health insurance and for Part I of the charter life underwriter examination. Pre: 320 and junior standing in a degree-granting college.

**338 Social Insurance (3)**

Analysis of the network of state and federal economic security programs including the OASDHI system, unemployment compensation, temporary disability programs, and the workers' compensation system. (Lec. 3) Pre: ECN 201, 202, 320, and junior standing in a degree-granting college, or permission of instructor.

**340 Organization and Management Theory I (3)**

Management processes, organizational theory and behavior, organizational structure, international business, ethics, and environmental analysis. Emphasis on developing conceptual and analytical skills. (Lec. 3) Pre: junior standing in a degree-granting college.

**341 Organizational Behavior (3)**

Introduction to organizational behavior; theory of human relations in industry; individual and group dynamics as well as motivational theories applied to current business issues, international business, and technological changes. (Lec. 3) Pre: junior standing in a degree-granting college.

**342 Human Resources Management (3)**

Role of the personnel department in an organization. Employer-employee problems at various internal levels and their impact on the organization and its environment. Covers such areas as manpower planning, the recruitment process, training, employee relations, pension planning, and occupational safety in the public and private sectors. Cases and lectures. (Lec. 3) Pre: junior standing in a degree-granting college.

**343 Skills Development in Organizational Behavior (3)**

Developing the managerial skills and competencies of leadership, motivation, conflict resolution, and interpersonal relations through dynamic cases, experiential exercises, and personal development sessions. (Lec. 3) Pre: 340, 341, or permission of instructor.

**344 Labor Problems (3)**

Historical development of labor unions, changing composition of the labor force. Factors determining wage levels and employment in the firm and market. Analysis of mobility and occupational and regional wage differentials; the power of unions to raise wages; the role of investments in the human agent as a factor in economic growth. (Lec. 3) Pre: ECN 201 or permission of instructor.

**345 Business and Society (3)**

Contemporary environmental issues confronting domestic and international management—pollution, government regulation, insider trading, equal opportunity, business ethics—are investigated. (Lec. 3) Pre: junior standing in a degree-granting college.

**346 Women in Business and Management (3)**

Analysis of sex-role behavior in the workplace. The history, current status, and future prospects of

women and men in business and the organizational response to the changing work force. (Lec. 3) Pre: 340 recommended. Not for graduate credit.

### **355 Operations and Supply Chain Management (3)**

Operations management problems in global and domestic environments. Operations strategy, service, and manufacturing; forecasting; inventory management; production and material requirements planning; scheduling; just-in-time; and quality management. (Lec. 3) Pre: 110 or CSC 101, 211, or 212; junior standing in a degree-granting college or permission of instructor.

### **356 Business Applications Programming (3)**

Techniques for the development of business software applications using appropriate hardware platforms and software environments. Emphasis on creation and manipulation of data structures used in business systems. (Lec. 3) Pre: 110; junior standing in a degree-granting college.

### **357 Information Technology in Business Organizations (3)**

An overview of existing and developing information technologies used in business organizations. Topics include computer hardware and software, business information systems, operating systems, data communications, and local- and wide-area networks. (Lec. 3) Pre: junior standing in a degree-granting college.

### **358 Business Data Communications and Networking (3)**

Introduction to data communications and computer networks within the context of modern business organizations. Emphasis on current technologies and their impact on management information systems. (Lec. 3) Pre: junior standing in a degree-granting college.

### **359 Management Systems Analysis (3)**

Analysis, concepts, methods, and techniques used in the evaluation of business processes leading to the design strategies for developing management information systems. (Lec. 3) Pre: junior standing in a degree-granting college.

### **360 Introduction to Logistics (3)**

Provides the background to understanding the strategic possibilities and goals of logistics. Specifically addressing the design, operation, and control of logistics systems for firms. (Lec. 3) Pre: junior standing in a degree-granting college.

### **365 Marketing Principles (3)**

An introduction to marketing from a managerial viewpoint. Examines social, economic, technological, legal, ethical, and other environmental factors and their impact on product, price, promotion, and distribution decisions in a worldwide market. (Lec. 3) Pre: junior standing in a degree-granting college. Proficiency test available if course was taken

at a non-AACSB program prior to transfer to the University.

### **366 Consumer Behavior (3)**

A review of the consumer decision-making process and factors that influence consumers, including ethical issues. Implications for cross-cultural marketing are examined. (Lec. 3) Pre: 365 or concurrent enrollment.

### **367 Marketing Research (3)**

Describes the nature and scope of marketing research activities. Reviews research designs, sampling, measurement, analysis, and other issues with focus on providing marketing information to management. (Lec. 3) Pre: 211 or 212 or STA 308 and BUS 365.

### **401 Accounting Computer Systems (3)**

Accounting information systems and use of the computer for decision making; emphasis on sources of information and employment of analytical tools in solving accounting problems. (Lec. 3) Pre: 301 or concurrent enrollment in 301 and junior standing in a degree-granting college or permission of instructor.

### **402 Advanced Accounting (3)**

Accounting principles and policies for governmental and nonprofit organizations, multinational and multidivisional organizations, partnerships, and other complex organizational structures. (Lec. 3) Pre: 302 or permission of instructor.

### **403 Federal Tax Accounting (3)**

Federal laws, regulations, and other authorities affecting taxation of individuals. (Lec. 3) Pre: 202 and junior standing in a degree-granting college or permission of instructor.

### **404 Auditing (3)**

Auditing standards, procedures, programs, working papers, and internal control. (Lec. 3) Pre: 302.

### **420 Advanced Financial Management (3)**

Intensive research on selected current topics relating to the financial management of the firm. Extensive use of the case method. (Lec. 3) Pre: 320 or permission of instructor. Not for MBA credit.

### **421 Speculative Markets (3)**

Examination of the concepts of forward pricing and its applications to the area of commodity and financial futures and options. (Lec. 3) Pre: 320 or permission of instructor.

### **422, 423 Student Investment Fund I and II (3 each)**

Students analyze industries and companies and manage stocks owned by the Alumni Association. (Seminar) Night class held in Trading Room. Enrollment is by competitive application. 423 is a continuation of 422 and may not be taken for credit in Finance. Pre: 321. Not for graduate credit.

### **424 Fixed Income Security Analysis (3)**

Designed to acquaint students with the institutional arrangements and pricing of various fixed income securities such as convertible bonds, mortgage loans, and mortgage-backed securities. (Lec. 3) Pre: 320 and 322. Not for graduate credit.

### **425 Mutual Funds Management (3)**

Overview of mutual funds business. Portfolio management, risk management techniques, shareholder servicing, federal and state regulatory oversight, marketing and distribution, custody, technology, and societal issues. (Lec. 3) Pre: 320, 321 or permission of instructor.

### **426 Bank Financial Management (3)**

Nature of the financial decisions facing the management of an individual bank. Current bank financial practices, research, and appropriate banking models considered. (Lec. 3) Pre: 320, 322 or permission of instructor. Not for graduate credit for students in the College of Business Administration.

### **427 Financial Theory and Policy Implications (3)**

Examination of the determinants of long-run financial success of the firm. Includes a study of how the capital budgeting process is linked to capital structure management. (Lec. 3) Pre: 320. Not for MBA credit.

### **428 Multinational Finance (3)**

Methods of financing multinational corporations. Foreign exchange, translation of financial statements, multinational funds flow and international liquidity, international financial reporting and tax policy, international money, stock, and bond markets. (Lec. 3) Pre: 320 or permission of instructor. Not for MBA credit.

### **429 Global Investment Management (3)**

Detailed analysis of the problems encountered in the process of investing funds in international capital markets. Particular attention is devoted to multi-currency dimensions, foreign information sources, and foreign regulations. (Lec. 3) Pre: 320, 321.

### **430 Basic Managerial Economics (3)**

Introduction to the classic theories of demand, production, and cost management in the context of modern financial theory. Includes empirical model building using microcomputers. (Lec. 3) Pre: 320. Not for graduate credit.

### **435 Topics in Insurance (3)**

Analysis of selected topics and current issues in the insurance marketplace. Topics will vary from semester to semester. (Seminar) Pre: 320, 335, and 337, or permission of instructor.

### **441 (or COM 402) Leadership and Motivation (3)**

Examination of theory and research in the areas of leadership and motivation in organizational settings. Emphasis on application of theory in developing essential leadership skills within individuals and in

creating effective motivational programs within organizations. (Lec. 3) Pre: 340, 341 or COM 251 or permission of instructor.

**442 Organization and Management Theory II (3)**  
Analysis of complex organizational situations emphasizing managerial problems dealing with structure, coordination, control, and integration. Conceptual skills for organizational analysis, including model and systems approaches. (Lec. 3) Pre: 340 or permission of instructor.

**443 Organization Development and Change (3)**  
Behavioral science applications to the planning of systematic organizational change and development. Theory, concepts, techniques, and cases for change agents and managers of change. (Lec. 3) Pre: 340, 442, or permission of instructor.

**444 Labor Relations (3)**  
Public interest in labor relations and problems involved in collective bargaining. Major adjustments of public and private management to changes in labor policy of federal and state governments, community, and labor unions. (Lec. 3/Online) Pre: 342. Not for graduate credit.

**445 Business Policy (3)**  
Case analysis is used to study strategic issues and problems of mission and goal setting, planning, implementing, and controlling in domestic and multinational firms. (Lec. 3) Pre: 202 and 320 and 340 and 355 and 365 and 315 or 315 concurrently and senior standing in the College of Business Administration. Not for graduate credit.

**446 Advanced Management Seminar (3)**  
Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. (Seminar) Pre: 340.

**447 Compensation Administration (3)**  
Concepts, models, theories, and legislation related to the employee compensation process. Discussion and skill acquisition in job analysis, job evaluation, wage surveys, and performance appraisal. (Lec. 3) Pre: 340 or permission of instructor. Not for graduate credit.

**448 International Dimensions of Business (3)**  
Introduction to the international aspects of business, including the cultural, legal, and political environment faced by the multinational corporation. (Lec. 3) Pre: senior standing or permission of dean. Not for MBA credit.

**449 Entrepreneurship (3)**  
Procedure for starting one's own business including the following topics: the business idea, personality traits, feasibility analysis, business plan, and functional area basics. (Lec. 3) Pre: junior, senior, or graduate standing or permission of instructor. Not open to students with credit in EEC (REN) 325.

**450 Small Business Management (3)**  
Investigation and evaluation of the small business enterprise. Current literature studied and projects completed to enable students to understand and appreciate the operations of small businesses. (Lec. 3) Pre: senior standing in the College of Business Administration or permission of instructor.

**455 Business Applications Programming II (3)**  
Intermediate concepts for developing software solutions to business applications using appropriate hardware platforms and software environments. (Lec. 3) Pre: junior standing in a degree-granting college. Not for graduate credit.

**456 Management of Databases (3)**  
Concepts and methods in management of data: creation, design, and implementation; data models; integrity; and security. Use of database management systems software. (Lec. 3) Pre: junior standing in a degree-granting college

**457 Design for Management Information Systems (3)**  
Concepts, methods, and techniques used in the design of management information systems. Field work required. (Lec. 3) Pre: 359, 456. Not for graduate credit.

**458 Seminar in Management Information Systems (3)**  
Preparation and presentation of papers on selected topics. (Seminar) Pre: junior standing in a degree-granting college. Not for MBA credit.

**459 Management of Quality Control and Improvement (3)**  
Principles of quality management including control charts, process management, and other techniques, with emphasis on the effect of these principles on decision making in various organizations. (Lec. 3) Pre: 110 and 211 or 212 or permission of instructor. Not for graduate credit.

**460 Global Supply Chain Management (3)**  
Examines factors that impact on the design and management of firms' strategies through simulation and cases. (Lec. 3) Pre: 355 or permission of instructor. Not for graduate credit.

**461 Forecasting (3)**  
Forecasting for advanced students in all areas of business administration. Introduction to time series analysis including decomposition of the multiplicative model, exponential smoothing, and ARIMA processes. A variety of software systems are employed, with special emphasis on microcomputer systems. (Lec. 3) Pre: 110 and 211 or 212 or permission of instructor. Not for graduate credit.

**462 Supply Chain Network Modeling and Optimization (3)**  
Factors and practices necessary for modeling/designing existing networks, and developing optimal networks using contemporary technologies. Modeling

and optimization of global sourcing and distribution networks. (Lec. 3) Pre: 320 and 322 or permission of instructor.

**463 Advanced Concepts in Supply Chain Management (3)**  
Advanced concepts in supply chain management and operations management such as demand management; multi-location inventories, capacity planning and control; theory of constraints. (Lec. 3) Pre: 355 or permission of instructor.

**465 Marketing Communications (3)**  
The "communications mix" is explored in terms of a total promotional program. Characteristics of advertising media, sales promotion, public relations, and publicity are surveyed. (Lec. 3) Pre: 365 or permission of instructor. Not for MBA graduate credit.

**466 Product Innovation and Strategy (3)**  
Development and management of new and existing products and services from a decision-making perspective. Emphasis on value creation through the development of innovative products and services. (Lec. 3) Pre: 365. Not for MBA graduate credit.

**467 Customer Relationship Management (3)**  
Planning, organization, and control relationship activities, including sales techniques and strategies, development and management of sales organizations and distribution channels, and emerging technologies. (Lec. 3) Pre: 365. Not for MBA graduate credit.

**468 Global Marketing (3)**  
Focus on understanding how cultural, political, economic, legal, and other macro factors affect market strategies. Application of these factors in dealing with planning and organizing for global marketing operations. (Lec. 3) Pre: 365 or equivalent. Not for MBA graduate credit.

**469 Special Topics in Marketing (3)**  
Selected topics of current interest in marketing. (Lec. 3) Pre: 365. Not for MBA graduate credit.

**470 Marketing Policy and Problems (3)**  
Summary course, with emphasis on decision making in all marketing areas and on use of the case method. (Seminar) Pre: 365, 367, and either 465 or 466 or 467 or 468 or 469. Not for MBA graduate credit.

**491, 492 Directed Study (1-3 each)**  
Independent study supervised by college faculty. Seminar meetings concerned with specific business topics. (Independent Study) Must be student in College of Business Administration with more than 75 credits and permission of instructor. Not for graduate credit.

**493 Internship in Business Administration (3 or 6)**  
Approved, supervised work experience with participation in management and problem solving related to the student's major field. College of Business internships for 3 credits require approximately 120 hours of field experience and 20 hours of class

work. Internships for 6 credits require approximately double this amount of work. May be offered online. Pre: junior standing with 75 credits, admission into internship program, and permission of instructor. Not for graduate credit. S/U only.

### **515 Law and Accounting (3)**

Introduction to C.P.A. law exam, question and answer techniques, coverage of most accounting-related legal subjects currently included on the C.P.A. exam. (Lec. 3) Pre: MBA 530 or BUS 315 or permission of dean.

### **601 Practicum in Business Teaching (1)**

Course involves training and experience in teaching undergraduate business courses under the supervision of a full-time faculty member. Participation in the instructional development program is an essential component of the class. (Practicum) Pre: enrollment in Ph.D. program in business administration and permission of Ph.D. program director. S/U only. May be repeated.

### **602 Doctoral Colloquium in Business Research (1)**

Course involves presenting the results of at least one piece of original research to faculty and other Ph.D. candidates. When not presenting, students are expected to play an active role in critiquing the presented research. (Lec. 1) Pre: permission of Ph.D. program director. S/U credit only. May be repeated.

### **603 Special Problems in Business Research (1-6)**

Advanced research and writing of theoretical and empirical papers in business administration in the student's area of specialization under the supervision of a faculty advisor. All doctoral students in Phase II of the doctoral program in business administration who have completed their course work must register for this course. Pre: permission of Ph.D. Program Director. S/U only. May be repeated.

### **604 Doctoral Research Seminar (3)**

Provides a rigorous analysis of current research questions and research techniques used to address those questions in the finance discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration. May be repeated.

### **605 Organizational Behavior (3)**

Incorporates the insights gleaned from the disciplines of psychology, sociology, anthropology, and the social sciences of politics, economics, and history in the study of the behavior of organizations and of their principal actors. (Lec. 3) Pre: MBA 502 or permission of instructor.

### **606 Advanced Organizational Theory and Behavior (3)**

Previous knowledge of classical and traditional management thought used to provide concepts, analytical approaches, and skills for understanding how behavioral sciences influence complex organizational systems. (Lec. 3) Pre: 605.

### **608 Doctoral Research Seminar (3)**

Provides a rigorous analysis of current research questions and the research techniques used to address those questions pertinent to Management Information Systems. Recent developments and current issues are addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration. May be repeated.

### **609 Doctoral Research Seminar (3)**

Provides a rigorous analysis of current research questions and the research techniques used to address those questions in the management science discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration. May be repeated.

### **610 Seminar in Marketing (3)**

Preparation and presentation of papers on selected topics in marketing. (Seminar) Pre: MBA 505 or permission of instructor. May be repeated.

### **611 Doctoral Research Seminar (3)**

Provides a rigorous analysis of current research questions and research techniques used to address those questions in the marketing discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration. May be repeated.

### **612 Knowledge Systems in Managerial Disciplines (3)**

Examination of knowledge production and dissemination systems in management disciplines. Discussion of various paradigms and philosophy of science perspectives. Metascientific and research program issues are examined. (Seminar) Pre: Ph.D. candidate.

### **691, 692 Directed Study in Business (3)**

Advanced doctoral level work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

### **699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit. May be repeated.

## **Chemical Engineering (CHE)**

*Chairperson: Professor Bose*

### **212 Chemical Process Calculations (3)**

Orientation to chemical and biological engineering, material and energy balance computations on chemical processes, use of gas laws, vapor pressure, humidity, solubility, and crystallization. (Lec. 3) Pre: CHM 112 or 192.

### **272 Introduction to Chemical Engineering Calculations (3)**

Introduction to the use of computers and numerical methods, including numerical solution of differential equations as applied to chemical and biological engineering. (Lec. 3) Pre: 212 and MTH 243.

### **313 Chemical Engineering Thermodynamics I (3)**

Applications of the first, second, and third laws of thermodynamics involving thermodynamics, thermochemistry, energy balances, combustion, power cycles, refrigeration, and properties of pure fluids. (Lec. 2, Lab. 3) Pre: 212 or CHM 431 and MTH 243.

### **314 Chemical Engineering Thermodynamics II (3)**

Continuation of 313 with applications to thermodynamics of mixtures, phase and chemical equilibria. (Lec. 2, Lab. 3) Pre: 313.

### **322 Chemical Engineering Microlaboratory (2)**

Use of microprocessors, A/D and D/A converters, sensors, and control hardware to analyze and control laboratory-scale processes. (Lab. 6) Pre: credit or concurrent enrollment in 348.

### **328 Industrial Plants (1)**

Field trips to nearby plants demonstrating various phases of chemical engineering. Written reports are required. (Lab. 3) Pre: 348.

### **332 Physical Metallurgy (3)**

Fundamentals of physical metallurgy as they apply particularly to the engineering metals and their alloys. Properties, characteristics, and structure of metals, theory of alloys, thermal processing, and studies in corrosion. (Lec. 2, Lab. 3) Not open to students with credit in 333 or 437. Pre: CHM 101, 103, or 191.

### **333 Engineering Materials (3)**

First course in engineering materials devoted largely, but not exclusively, to physical metallurgy. Includes structure and properties of pure substances and binary systems at equilibrium and, when used intentionally, at nonequilibrium. (Lec. 2, Lab. 3) Pre: junior standing or permission of instructor. Not open to students with credit in 332 or 437.

### **340 Materials Processing and Metrology I**

See Industrial and Systems Engineering 340.

### **345, 346 Chemical Engineering Laboratory (2 each)**

Quantitative studies illustrating chemical engineering principles. Emphasis on report writing and the interpretation of experimental data. (Lab. 6) Pre: 348.

### **347 Transfer Operations I (3)**

Dimensional analysis; fluid statics; mass, energy, and momentum balances for fluid systems, boundary layers, turbulence, incompressible flow; flow through fixed beds of solids and fluidized beds; filtration. (Lec. 3) Pre: MTH 243.

**348 Transfer Operations II (3)**

Heat transfer: conduction, convection, radiation. Mass transfer: distillation, liquid extraction, gas absorption; staged and differential contact. (Lec. 2, Lab. 3) Pre: 347.

**349 Transfer Operations III (2)**

Diffusion and mass transfer, humidification and dehumidification, water cooling, absorption and ion exchange, drying, leaching. (Lec. 2) Pre: 348.

**351, 352 Plant Design and Economics I and II (3 each)**

Elements of plant and process design integrating the principles learned in previous courses. Emphasis is on optimum economic design and the writing of reports. (Lec. 1, Lab. 6) Pre: (for 351) 314 and 348. Pre: (for 352) 349 and 351 and credit for or concurrent enrollment in 464.

**391, 392 Honors Work (1–3 each)**

Independent study under close faculty supervision. Discussion of advanced topics in chemical engineering in preparation for graduate work. (Independent Study) Pre: junior standing and permission of chairperson.

**403, 404 Introduction to Design of Ocean Engineering Processes I, II (3 each)**

Theory and basic principles directly applicable to ocean-related processes. Desalination, mining, combating oil spills, seawater as a coolant, seawater as a waste dilutant, food processing, sulfur and petroleum production, recovery minerals. (Lec. 2, Lab. 4) Pre: permission of instructor.

**425 Process Dynamics and Control (3)**

Principles involved in automatic control of processing plants. Modeling and responses of dynamic systems, feedback control. (Lec. 3) Pre: MTH 243, CHE 464, and credit or concurrent enrollment in 347 or MCE 354.

**437 Materials Engineering (3)**

Introduction to engineering aspects of the fundamentals of the solid state. Structural, chemical, and physical properties of engineering materials with emphasis on ceramics, polymers, and composite materials. (Lec. 3) Pre: CHM 101, 103, or 191, or permission of chairperson.

**438 Failure Analysis and Prevention (3)**

Failure analysis of engineering components. Examples of overload, fatigue, creep, corrosion, and electrical failures in metals, glasses, ceramics, composites, polymers, concrete, and semiconductors. Case studies, microscopic techniques, and prevention are emphasized. (Lec. 3) Pre: 332, 333, or 437.

**447 Food Engineering (4)**

Basic principles underlying unit operations of chemical engineering applied to food industries. Topics covered include heat transfer, fluid flow, extraction, and drying. (Lec. 3, Lab. 3) Pre: CHM 124, PHY 112,

MTH 132 or 142, and permission of instructor. Not for major credit in chemical engineering.

**464 Industrial Reaction Kinetics (3)**

Modeling of simple chemical-reacting systems; computation of design parameters to satisfy system constraints and typical restraints (e.g., product rate and distribution) and conditions of optimality. (Lec. 3) Pre: 314.

**491, 492 Special Problems (1–6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Not for graduate credit in chemical engineering.

**501, 502 Graduate Seminar (1 each)**

Seminars presented by speakers from academia and industry. (Seminar) Required of all graduate students, with a maximum of 1 credit per year allowed. May be repeated for a maximum of 2 credits. S/U credit.

**503 Dynamics of Chemical Engineering Applications (3)**

Emphasizes analytical and/or numerical techniques commonly used in analysis arising from classical chemical engineering applications; necessary for understanding more complex problems.

**513 Advanced Chemical Engineering Thermodynamics I (3)**

Applications of the first, second, and third laws of thermodynamics and their relation to chemical engineering processes. Emphasis on properties of fluids, chemical and physical equilibria, phase stability, and polymers. (Lec. 3) Pre: 313, 314 or equivalent, graduate standing, or permission of chairperson. In alternate years.

**530 Polymer Chemistry (3)**

Molecular weight distribution, polymer synthesis, chain conformation, solution properties and phase behavior, and characterization techniques. (Lec. 3) Pre: CHM 228 and CHE 332 or permission of instructor. In alternate years.

**531 Polymer Engineering (3)**

Glass and crystalline transitions, viscoelasticity, time-temperature superposition, polymer processing, and mechanical properties of plastics, fibers, and elastomers. (Lec. 3) Pre: CHE 348 or MCE 448 or permission of instructor. In alternate years.

**532 Ceramic Engineering (3)**

Properties of ceramic materials as related to starting materials and forming, densification, and finishing processes. Emphasis on resulting phases and microstructure. Application of physical and chemical principles to tailor properties to engineering needs. (Lec. 3) Pre: 437 or equivalent. In alternate years.

**533 Engineering Metallurgy (3)**

Structures and properties of metals and alloys required to meet typical engineering problems; proper selection of tool materials; properties of stainless steels; materials of special importance in nuclear fields, etc. (Lec. 3) Pre: 333 or permission of instructor.

**534 (or OCE 534) Corrosion and Corrosion Control (3)**

Chemical nature of metals, electrochemical nature of corrosion. Types of corrosion, influence of environment, methods of corrosion control. Behavior of engineering materials in corrosion with emphasis on industrial and ocean environments. (Lec. 3) Pre: permission of instructor.

**535 (or OCE 535) Advanced Course in Corrosion (3)**

High-temperature corrosion, oxidation by gaseous environments, industrial problems with high-temperature corrosion. Materials selection and techniques to combat high-temperature corrosion. (Lec. 2, Lab. 3) Pre: 534 (or OCE 534) or permission of instructor.

**537 (or OCE 537) Advanced Materials Engineering (3)**

Engineering properties, molecular design, and applications of materials. Synthesis, fabrication, and processing of materials. Effects of environment on materials, materials products, devices, and systems. (Lec. 3) Pre: 437 and PHY 341.

**539 Electron and Light Microscopy of Solids (3)**

Theory and physical principles governing the design and use of light and electron optical systems in identification, analysis, and structural characterization of metals, ceramics, polymers, glasses, and composites. Emphasis on polarized light and scanning electron microscopy. (Lec. 3)

**541 Transport Phenomena I (3)**

Analysis of transport processes including momentum, heat and mass transfer. Development of mathematical models and their solutions. (Lec. 3) Pre: 347, 348 or equivalent, graduate standing, or permission of chairperson. In alternate years.

**542 Advances in Interfacial Phenomena (3)**

Topics will include capillarity, surface tension; surface thermodynamics, electrical aspects of surface chemistry; contact angles and wettability; emulsions and foams; adsorption from solutions; hydrodynamic stability of interfaces. (Lec. 3) Pre: CHM 431, 432 or equivalent, or permission of instructor. In alternate years.

**548 Separations for Biotechnology (3)**

A study of methods of concentration used in biotechnology and pharmaceutical industries for production and isolation of products. (Lec. 3) Pre: 348 or 447. In alternate years.

**560 Chemical and Physical Processes of Integrated Circuit Fabrication (3)**

Chemical and physical processes used in the fabrication of integrated circuits and devices. Emphasis on crystal growth, oxidation, CVD, plasma processes, photochemical processes, solid-state diffusion, lithography, and their relation to device performance. (Lec. 3) Pre: CHM 431, CHE 349, or equivalent. In alternate years.

**574 Biochemical Engineering I (3)**

Introduction to biotechnology. Includes properties of biological materials, dynamics, control, and operation of biological systems and processing of biological materials. (Lec. 3) Pre: permission of instructor. In alternate years.

**576 Process Engineering for Pollution Prevention (3)**

Management of processes and development of techniques for waste minimization in the chemical process, machine tool coating, plating, plastics, and other industries. (Lec./Workshop) Pre: permission of instructor.

**577, 578 Seminar in Sensors and Surface Technology (1)**

Students, faculty, and invited outside speakers present and discuss selected topics related to research interests of the Sensors and Surface Technology Partnership. (Seminar) Pre: permission of instructor. May be repeated. S/U only.

**591, 592 Special Problems (1–6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**599 Master's Thesis Research (1–9)**

Number of credits is determined each semester in consultation with the major professor. (Independent Study) S/U credit.

**614 Advanced Chemical Engineering Thermodynamics II (3)**

Advanced topics in phase stability, phase and chemical equilibrium, and statistical thermodynamics. (Lec. 3) Pre: 513. In alternate years.

**641 Transport Phenomena II (3)**

Steady, unsteady, and multidimensional heat transfer. Mass transport at low and high fluxes; approximate methods for heat and mass transfer problems. (Lec. 3) Pre: 541 or permission of instructor. In alternate years.

**643 Fluid Dynamics (3)**

Advanced problem course dealing with isothermal and non-isothermal flow of compressible and incompressible fluids. (Lec. 3) In alternate years.

**691, 692 Special Problems (1–6 each)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Chemistry (CHM)**

*Chairperson:* Professor Euler

**099 Basic Chemistry Lecture (3)**

Part one of a two-semester 101 sequence designed for students who need additional work in problem-solving skills. Successful completion of part one leads to a special section of 101 in the second semester. (Lec. 3) Not for general education or program credit. S/U credit.

**100 Chemistry of Our Environment (3)**

Elementary chemistry for nonscience majors, emphasizing chemical aspects of the human environment. Chemistry of the biosphere, pollution, and aspects of industrial chemistry. (Lec. 3) (N)

**101 General Chemistry Lecture I (3)**

Fundamental chemical concepts and principles. Topics include states of matter, stoichiometry, reactivity, atomic structure, thermochemistry, bonding, molecular structure, and solutions. Not open to students with credit in 103 or 191. (N)

**102 Laboratory for Chemistry 101 (1)**

Experimental applications of chemical concepts and reactivity emphasizing safety and technique. Experiments follow the content of 101. Pre: credit or concurrent registration in 101.

**103 Introductory Chemistry Lecture (3)**

One-semester general chemistry course designed for students whose curriculums require the one-semester organic chemistry course, 124. (Lec. 3) Not open to students with credit in 101 or 191. (N)

**105 Laboratory for Chemistry 103 (1)**

Fits course content of 103. (Lab. 3) Pre: credit or concurrent enrollment in 103.

**112 General Chemistry Lecture II (3)**

Chemical kinetics, equilibrium, elementary thermodynamics, and electrochemistry integrated with descriptive chemistry and practical applications. Pre: 101. (N)

**114 Laboratory for Chemistry 112 (1)**

Experiments follow the content of 112. Pre: 102, credit or concurrent enrollment in 112.

**124 Introduction to Organic Chemistry (3)**

Elementary principles of organic chemistry with emphasis on aliphatic compounds, especially those of physiological significance such as amino acids and proteins, carbohydrates, fats, and waxes. (Lec. 3) Pre: 101 or 103. Not open to chemistry or chemical engineering majors.

**126 Laboratory for Chemistry 124 (1)**

Introduction to chemistry procedures, with emphasis on properties of substances of physiological significance. (Lab. 3) Pre: 102 or 105, credit or concurrent enrollment in 124. Not open to chemistry or chemical engineering majors.

**191 General Chemistry (5)**

Atomic theory and structure, stoichiometry, chemical reactions, thermochemistry, bonding, and states of matter. Laboratory experiments illustrate basic procedures, concepts, and principles. (Lec. 4, Lab. 3) Pre: chemistry major. Not open to students with credit in 101.

**192 General Chemistry (5)**

Continuation of 191. Principles of kinetics, equilibrium, and thermodynamic integrated with descriptive chemistry and qualitative analysis. Laboratory experiments parallel lecture topics. (Lec. 4, Lab. 3) Pre: 101, 102, or 191, chemistry major. Not open to students with credit in 112.

**212 Quantitative Analysis (4)**

Principles of gravimetric and volumetric analysis with detailed attention to solution of stoichiometric problems. Laboratory analysis of representative substances by gravimetric or volumetric procedures. (Lec. 3, Lab. 3) Pre: 112, 114 or 192.

**226 Organic Chemistry Laboratory (2)**

Common techniques and typical preparative methods in both aliphatic and aromatic series. (Lab. 6) Pre: 114, credit or concurrent enrollment in 228. Not open to students with credit in 229 or 230.

**227 Organic Chemistry Lecture I (3)**

General principles and theories with emphasis on classification, nomenclature, methods of preparation, and characteristic reactions of organic compounds in aliphatic series. (Lec. 3) Pre: 112 or 192.

**228 Organic Chemistry Lecture II (3)**

Continuation of 227 with emphasis on the aromatic series. (Lec. 3) Pre: 227.

**229 Organic Chemistry Laboratory I (1)**

Common techniques and typical preparative methods in aliphatic series. (Lab. 3) Pre: credit or concurrent enrollment in 227.

**230 Organic Chemistry Laboratory II (1)**

Continuation of 229 with emphasis on the aromatic series. (Lab. 3) Pre: 229 or equivalent and credit or concurrent enrollment in 228. Only for students requiring a second credit of organic laboratory.

**291 Organic Chemistry (3)**

Development of principles and theory through an examination of structure, nomenclature, and reactions of organic compounds. (Lec. 3) Pre: 192 or permission of instructor. Not open to students with credit in 227.

**292 Organic Chemistry (5)**

Continuation of 291 with extension to several additional families of compounds. (Lec. 3, Lab. 6) Pre: 291. Not open to students with credit in 228.

**335 Physical Chemistry Laboratory (2)**

Physical chemical properties of gases, liquids, and solutions; electrochemical cells; phase diagrams of binary and ternary systems; and chemical kinetics. Designed for chemistry majors. (Lab. 4) Pre: 431. May be taken concurrently with 431.

**353 Undergraduate Research (1-12)**

Methods of approach to a research problem. Literature, laboratory work, and a report of an original problem or problems. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 12 credits.

**354 Undergraduate Research in Forensic Chemistry (1-12)**

Methods of approach to a research problem in forensic chemistry. Literature, laboratory work, and a report of an original problem or problems. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 12 credits.

**391 Forensic Science Overview (1)**

A seminar/discussion group designed to introduce students to the areas and issues in forensic science. Students seeking a forensic science minor should attend this weekly seminar two semesters. (Lec. 1) May be repeated for a total of 3 credits.

**392 (or FOS 392) Introduction to Criminalistics (3)**

A class designed to introduce students to the basic areas and issues in forensic science in criminalistics. It is required for students seeking a forensic science minor. (Lec. 3) May not be repeated for credit. May not be taken in the same semester as 391.

**401 Intermediate Inorganic Chemistry (3)**

Principles of inorganic chemistry broadly related to structure and reactivity. Many-electron atoms bonding theories, acid-base concepts, coordination chemistry, reaction mechanisms. (Lec. 3) Pre: 432.

**402 Physical Inorganic Laboratory (2)**

Synthesis of inorganic compounds emphasizing inert atmosphere and vacuum line techniques; characterization by spectroscopic and electrochemical techniques. (Lab. 6) Pre: 401.

**412 Instrumental Methods of Analysis (3)**

Theory and application of optical and electrical instruments to solution of chemical problems: flame

photometry; emission spectroscopy; ultraviolet, visible, and infrared spectrophotometry; colorimetry; turbidimetry; nephelometry; fluorometry; potentiometry; voltammetric titration methods. (Lec. 3) Pre: 228 and credit or concurrent enrollment in 432.

**414 Instrumental Methods of Analysis Laboratory (2)**

Applications of instrumental methods to the solution of problems in analytical chemistry. (Lab. 6) Pre: credit or concurrent enrollment in 412.

**425 Advanced Organic Laboratory (2)**

Techniques in organic chemical research, including handling air sensitive chemicals, flash chromatography, and instrumental methods of structure determination. Separation of mixtures and identification of components by infrared and nuclear magnetic resonance spectroscopies. (Lab. 6) Pre: 292 or 226 and 228 and credit or concurrent enrollment in 427.

**427 Intermediate Organic Chemistry (3)**

Intermediate organic chemistry with emphasis on organic reaction mechanism, stereochemistry, spectroscopic characterization, and newer synthetic methods. (Lec. 3) Pre: 226, 228, or 292.

**431 Physical Chemistry I (3)**

Gas laws, laws of thermodynamics, chemical equilibrium, phase equilibria, and electrochemistry. (Lec. 3) Pre: 114 or 192 and MTH 142 and PHY 112 or 204, or 214. May be taken for graduate credit by graduate students whose undergraduate programs do not require physical chemistry.

**432 Physical Chemistry II (3)**

Atomic theory, quantum chemistry, bonding, molecular interactions, chemical kinetics, kinetic theory, and spectroscopy. (Lec. 3) Pre: 431. May be taken for graduate credit by graduate students whose undergraduate programs do not require physical chemistry.

**441 The Chemistry of Biological Systems (3)**

Chemical biology, molecular aspects of biological structures, equilibria, energetics, reactions, and metabolism. (Lec. 3) Pre: 228, 432.

**492 Seminar in Chemistry (1)**

Preparation and presentation of papers on selected topics in chemistry. Required of seniors in chemistry. (Seminar) Pre: credit or concurrent enrollment in 432. Not for graduate credit.

**501 Advanced Inorganic Chemistry I (3)**

Systematic analysis of bonding schemes and structural aspects of molecular systems encountered in inorganic chemistry. Special emphasis on electron density distributions, physical methods of analysis, and practical applications of quantum mechanics. (Lec. 3) Pre: 401.

**502 Advanced Inorganic Chemistry II (3)**

Modern inorganic chemistry approached from experimental, theoretical, and descriptive points of view. Includes electronic structure and bonding in coordination chemistry, topology, thermodynamics of complex formation, mechanisms, lanthanides, and actinides. (Lec. 3) Pre: 401 or equivalent.

**504 Physical Methods of Inorganic Chemistry (3)**

Theory and application of numerous experimental techniques used for the elucidation of molecular and electronic structure of inorganic molecules. Primary emphasis is on nuclear magnetic resonance, optical, infrared, Raman, and electron paramagnetic resonance spectroscopies. (Lec. 3) Pre: 401 or permission of instructor.

**511 Advanced Analytical Chemistry I (3)**

Fundamentals of electrochemistry, including a review of electricity and how it passes through conductors, electrochemical cells, electrode reactions, ionic solutions, polarization, transport mechanisms, voltammetry. Statistical treatment of experimental data. (Lec. 3) Pre: 412 or permission of instructor.

**512 Advanced Analytical Chemistry II (3)**

Fundamentals of chromatographic and electrophoretic separations and major spectroscopic techniques. Basic theory, instrumentation, advantages, limitations, and applications of these techniques as well as new instrumental developments are discussed. (Lec. 3) Pre: 412 and MTH 243.

**519 Theoretical Concepts in NMR (3)**

The physical concepts of NMR phenomena are presented, beginning with signals generated in the probe, carried through the spectrometer console, into the computer, and finally represented as a spectrum. (Lec. 3) Pre: 292, PHY 112, and MTH 141, or equivalents, or permission of instructor.

**520 Interpretation of One-Dimensional and Two-Dimensional NMR Spectra (3)**

Uses of chemical shifts and coupling constants are presented for interpreting one-dimensional (1D) and two-dimensional (2D) proton and carbon spectra. Includes relaxation time measurements, decoupling, and simple 2D interpretation. (Lec. 3) Pre: 292, PHY 112, and MTH 141, or equivalents, or CHM 519 or permission of instructor.

**521 Advanced Organic Chemistry I (3)**

Emphasis on fundamental organic structure theory and reaction mechanisms. (Lec. 3) Pre: 226 and 228 or equivalent.

**522 Advanced Organic Chemistry II (3)**

Modern synthetic reactions and their application to such areas as natural products. (Lec. 3) Pre: 521 or permission of instructor.

**524 Interpretation of Two-Dimensional NMR Spectra (3)**

Covers the theoretical and practical aspects of two-dimensional (2D) NMR. Includes pulse sequences, instrument setup, and chemical applications. (Lec. 3) Pre: 519 and 520 or permission of instructor.

**531 Advanced Physical Chemistry I (3)**

Principles and applications of chemical thermodynamics and chemical statistical thermodynamics. Includes the three laws of thermodynamics, statistical distributions, statistical thermodynamic ensembles and fluctuations. Applications to ideal gases and crystals, real fluid, and chemical equilibrium. (Lec. 3) Pre: 432 or permission of instructor.

**532 Advanced Physical Chemistry II (3)**

Principles and applications of quantum chemistry. Includes the formal development of quantum theory and applications to electronic structure as well as other problems of chemical interest. (Lec. 3) Pre: 432 or permission of instructor.

**551 Nonthesis Master's Research (3)**

Research on original problem for fulfillment of research requirement of nonthesis master's degree. Literature survey, laboratory work, and detailed report required. (Independent Study) Pre: permission of chairperson.

**552 Nonthesis Master's Research (2-3)**

Research on original problem for fulfillment of research requirement of nonthesis master's degree. Literature survey, laboratory work, and detailed report required. (Independent Study) Pre: permission of chairperson.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. A minimum of 6 credits is required of students who have chosen the thesis option for the master's degree. (Independent Study) S/U credit.

**608 Inorganic Reaction Mechanisms (3)**

Kinetics and mechanisms of reactions in aqueous solution: techniques, results, and theoretical interpretation. Instrumentation for studying rapid reactions in solution, relaxation methods, electron transfer rates, hydrolytic and solvolytic reactions, metal ion complexation, reactions of biochemical significance. (Lec. 3) Pre: 502 or permission of instructor.

**616 Applied Analytical Techniques (3)**

Application of analytical instrumentation and techniques to practical problems. Limitations and specific difficulties of analyzing complex matrices in practical research. Problem-oriented presentation. (Lec. 3) Pre: 511 and 512 or permission of instructor.

**618 Theory of Separations (3)**

Companion to 616. In-depth presentation of theory of separation processes. Emphasis on methods de-

velopment, advanced topics, and current advances using gas and liquid chromatography. (Lec. 3) Pre: 511 or permission of instructor.

**621 Advanced Topics in Physical Organic Chemistry (3)**

Mechanistic aspects of organic chemistry: molecular orbital theory, thermal and photochemical cyclo-additions and rearrangements. Consideration of carbenes, nitrenes, and free radicals. Evaluation of steric, stereoelectronic, and secondary orbital effects. (Lec. 3) Pre: 521 and 522 or permission of instructor.

**623 Advanced Topics in Synthetic Organic Chemistry (3)**

Advanced topics in the synthetic aspects of organic chemistry. Synthetic reactions and techniques, strategies, and design. Conformational and stereochemical analyses, asymmetric synthesis, and natural product syntheses. (Lec. 3) Pre: 521 and 522 or permission of instructor.

**642, 643, 644 Graduate Seminar (1 each)**

Results of detailed literature surveys are presented orally and in writing. Required for candidates for advanced degrees in chemistry. (Seminar) S/U credit.

**691 Special Topics (1-3)**

Covers special research topics of interest. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 6 credits.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**930 Workshop in Chemistry Topics for Teachers (0-3)**

Especially designed for teachers of physical sciences. Basic topics of chemistry from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

**Chinese (CHN)**

Chairperson: Professor Morello

**101 Beginning Chinese I (3)**

Fundamentals of grammar and pronunciation, exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Chinese is required. (FC) [D]

**102 Beginning Chinese II (3)**

Continuation of 101. (Lec. 3) Students enrolling in this course should have taken 101 or equivalent. (FC) [D]

**103 Intermediate Chinese I (3)**

Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Students enrolling in this course should have taken 102 or equivalent. (FC) [D]

**104 Intermediate Chinese II (3)**

Continuation of 103. (Lec. 3) Students enrolling in this course should have taken 103 or equivalent. (FC) [D]

**205, 206 Composition and Conversation (3 each)**

Development of facility in spoken and written Chinese using contemporary topics; emphasis on general classroom discussion. (Lec. 3) Pre: (for 205) 104 or permission of instructor. Pre: (for 206) 205 or permission of instructor. (FC) [D]

**Civil and Environmental Engineering (CVE)**

Chairperson: Professor K. W. Lee

**220 Mechanics of Materials (3)**

Theory of stresses and strains, thin-walled cylinders, beam deflections, columns, combined bending and direct stresses, joints, and indeterminate beams. (Lec. 3) Pre: MCE 262 or concurrent enrollment.

**221 Mechanics of Materials Laboratory (1)**

Introduction to the physical and mechanical properties of civil engineering construction materials including steel, wood, Portland cement concrete, bituminous asphalt concrete, and polymers. Experimental evaluation of fundamental material properties and behavior under a variety of controlled laboratory conditions. (Lab. 3) Pre: credit or concurrent enrollment in 220. Required for civil engineering students only.

**240 Geomatics (2)**

Science and technology of obtaining and utilizing earth measurement data, including the description and purpose of field surveying equipment, including the automatic level, transit, EDM instrument, electronic total station, and GPS instrument. Includes the collection, sorting, storage, analysis, and presentation of data for engineering purposes. (Lec. 2) Pre: MTH 141.

**241 Geomatics Lab. (1)**

Field and laboratory experience in the operation and care of surveying equipment (including the automatic level, transit, EDM instrument, electronic total station, and GPS instrument), and the application of electronically collected field data for engineering planning and design, using a CADD program. (Lab. 3) Pre: credit or concurrent enrollment in 240 and 250.

**250 CADD for Civil Engineers (3)**

Operating system issues, basic elements of Computer-Aided Design and Drafting (CADD): creation of 2-D and 3-D models, solid modeling, rendering and animation, applications of CADD in civil engineering design. (Lec. 3) Pre: EGR 106. Preference given to students enrolled in the CVE undergraduate degree program.

**334 Construction Management (3)**

Introduction to construction planning; procedures involved in construction activities with major emphasis on heavy construction. (Lec. 3) Pre: 220.

**346 Transportation Engineering (3)**

Concepts of transportation planning and design as well as traffic analysis techniques are covered with respect to Multi-Mode travel within transportation systems. (Lec. 3) Pre: 220.

**347 Highway Engineering (3)**

Design of modern highways and streets including planning, location, geometric layout, drainage structures, bituminous materials, pavement structure, construction, operation, maintenance, and rehabilitation. (Lec. 3) Pre: 346.

**348 Highway Engineering Laboratory (1)**

Highway capacity analysis, computer applications of geometric design, soil resilient modulus test, L. A. abrasion test, asphalt viscosity test, Marshall and SuperPave mix-design, pavement management lab, and field trip. (Lab. 3) Pre: credit or concurrent enrollment in 347.

**354 Structural Analysis (3)**

Introduction to structural analysis, statically determinate systems, trusses, beams, frames, influence lines, deflections, conjugate beam, energy methods, statically indeterminate systems, force method, slope deflection, moment distribution, introduction to stiffness method. (Lec. 3) Pre: 220.

**355 Structural Engineering Lab. (1)**

The use of computer programs in structural analysis. A "teaching" type software program and "professional" type software program will be used. (Lab. 3) Pre: 220 and credit or concurrent enrollment in 354.

**370 Hydraulic Engineering (3)**

Applied hydraulics of flow in closed conduits and open channels: river and groundwater hydraulics. Analysis of hydraulic structures. Reservoir design. Principles of hydrology. (Lec. 3) Pre: MCE 354.

**371 Hydraulic Engineering Laboratory (1)**

Closed conduit flow measurements, pipe networks, evaluation of centrifugal pumps and characteristics, open channel flow measurements, development of gradually varying and rapidly varying flow profiles, computer implementation for design. (Lab. 3) Pre: MCE 354 and credit or concurrent enrollment in 370.

**374 Environmental Engineering (3)**

Water supply and treatment systems, sewerage treatment of municipal and industrial waste waters, stream pollution, groundwater analysis, air pollution, and disposal of solid waste materials. (Lec. 3) Pre: MTH 243 or permission of chairperson.

**375 Environmental Engineering Laboratory (1)**

Laboratory studies including measurement of environmental contaminants as well as various treatment processes such as granular media filtration. Interpretation, evaluation, and engineering applications of test data. (Lab. 3) Pre: credit or concurrent enrollment in 374.

**381 Geotechnical Engineering (3)**

Engineering properties of soils, seepage, consolidation theory, calculation of stresses, failure theories, shear strength of sand, shear strength of clay. Introduction to foundation engineering and geosynthetics. (Lec. 3) Pre: 220 and credit or concurrent enrollment in MCE 354.

**382 Geotechnical Engineering Laboratory (1)**

Laboratory studies of physical properties and behavior of soils: index properties, compaction, consolidation, and shear strength. Interpretation, evaluation, and engineering applications of test data. Introduction to foundation engineering and geosynthetics. (Lab. 3) Pre: credit or concurrent enrollment in 381.

**391 Honors Work (3)**

Independent study under close faculty supervision. Discussion of advanced topics in civil engineering in preparation for graduate work. (Independent Study) Pre: junior standing or permission of chairperson.

**422 Offshore Structure and Foundation Design**

See Ocean Engineering 422.

**442 Traffic Engineering (3)**

Highway traffic characteristics and methods of providing for an effective, free, and rapid flow of traffic. Types of studies, regulations, control devices and aids, planning, and administration. (Lec. 2, Lab. 3) Pre: 347 or permission of instructor.

**443 Intelligent Transportation Systems (3)**

Traffic systems operations/planning strategies; advanced transportation management systems; detection devices; benefits and evaluation; in-vehicle navigation theory; real-time dynamic routing issues. (Lec. 3) Pre: 346 or permission of instructor.

**450 Simulation Based Design for Civil Engineers (4)**

Advanced concepts of Computer-Aided Design and Drafting (CADD) as they pertain to a) digital prototyping, b) concurrent engineering, and c) continuous acquisition and lifecycle support, global standards, and file exchange formats. (Lec. 3, Lab. 3) Pre: 220 and 250.

**453 Computer Analysis of Structures (3)**

Introduction to matrix methods of structural analysis. Solutions of planar structures using a digital computer. (Lec. 3) Pre: 354 or equivalent.

**460 Steel Structures (3)**

Theory of steel structures including beams, columns, beam-columns, composite construction, and connections. Material properties, environmental loads, state of construction practice, fabrication, and economic aspects. (Lec. 3) Pre: 354 or permission. Not for graduate credit in civil engineering.

**465 Analysis and Design of Concrete Structures (3)**

Current criteria and practice for design of reinforced and prestressed concrete structures. Elastic and ultimate strength analysis of beams, slabs, columns, and frames. Comprehensive design problems. (Lec. 3) Pre: 354. Not for graduate credit in civil engineering.

**466 Structural Concrete Laboratory (1)**

Laboratory on structural concrete and construction technology involved in the materials aspects of the use of concrete. Cement properties, mix design, testing of fresh and hardened concrete, admixtures, reinforcement, concrete failure. (Lab. 3) Pre: 465 or concurrent enrollment in 465. Not for graduate credit in civil engineering.

**470 Water and Wastewater Transport Systems (3)**

Computer analysis of water storage and transmission. Design of water distribution and wastewater collection systems. (Lec. 2, Lab. 3) Pre: 370 or 374 or permission of instructor.

**471 Water and Wastewater Treatment Systems (3)**

Development of water quality standards. Design and analysis of physical, chemical, and biological treatment processes and their application to water and wastewater purification systems. (Lec. 2, Lab. 3) Pre: 374 or permission of instructor.

**472 Industrial Air Pollution (3)**

Sources and characteristics of urban-industrial air pollution, allowable concentrations and control, stack sampling, chemical supplements in air pollution control, diffusion of pollutants, site selection, and abatement programs. Air resources management programs. (Lec. 3) Pre: permission of instructor.

**474 Water Quality Sampling and Analysis (3)**

Laboratory and field work including sampling of surface and groundwater, chemical and biological analyses for water, monitoring, treated effluent quality control, and detection of hazardous contaminants. (Lec. 1, Lab. 6) Pre: 374 or permission of instructor.

**475 Water in the Environment (3)**

Evaluation of water as a resource and its relation to the environment: hydrologic cycle, water budgets, water uses, drought, flood, current water problems. (Lec. 3) Pre: 370 or permission of instructor.

**478 Hazardous Waste Disposal and Solid Waste Management (3)**

Sources, collection, treatment, and disposal of hazardous wastes and solid wastes. Conservation, recovery, and reuse of material. Economics of waste treatment, disposal, and reuse. (Lec. 3) Pre: permission of instructor.

**483 (or OCE 483) Foundation Engineering (3)**

Applications of geotechnical engineering principles to analysis and design of shallow foundations. Topics include foundation types, bearing capacity, settlement analysis, shallow foundations, earth pressures, retaining walls, introduction to deep foundations. (Lec. 3) Pre: 381 or equivalent.

**485 Engineering Geophysics**

See Geosciences 485.

**491, 492 Special Problems (1–6 each)**

Advanced work under supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Not for graduate credit in civil engineering.

**495 Civil and Environmental Engineering Systems (3)**

Civil and environmental engineering projects are studied, analyzed, designed, and discussed in areas of water resources, pollution control, geotechnics, structures, and transportation using systems techniques. (Lec. 3) Pre: senior or graduate standing in civil engineering.

**497 Civil Engineering Design I (2)**

Detailed project planning, conceptual design and layout, and environmental impact for the civil engineering integrated capstone design project. Speakers on ethics, professionalism, and professional practice. (Lab. 4) Pre: senior standing. Must be taken immediately prior to 498. Required of all seniors in civil and environmental engineering. Not for graduate credit in civil engineering.

**498 Civil Engineering Design II (3)**

Elements of planning, analysis, and design of a civil engineering project integrating the principles learned in previous courses; a group integrated capstone design project involving all major aspects of civil engineering design. (Lec. 1, Lab. 6) Pre: 497 and senior standing. Not for graduate credit in civil engineering.

**542 Traffic Systems Operations (3)**

Signalized and unsignalized intersection treatments; coordination concepts; arterial and freeway management, operating strategies, and design issues; simulation and optimization; performance evaluation. (Lec. 3) Pre: CVE 442 or permission of instructor

**545 Pavement Design (3)**

Pavement types; pavement system components; stresses in the pavement structure. Design factors

and criteria, pavement stabilization, structural design of flexible and rigid pavements for highways and airports, pavement maintenance and overlay design. (Lec. 3) Pre: 347 or equivalent.

**546 Urban and Rural Transportation**

See Community Planning 546.

**547 Geometric Design of Highways (3)**

Evaluation of alternative designs. Criteria and practices of geometric design; at grade intersections, interchanges, channelization, weaving parking facilities, and road appurtenances; safety considerations, lane balancing, ramps, and terminals. (Lec. 3) Pre: 347 or equivalent.

**548 Bituminous Transportation Materials and Mix-Design (3)**

Asphalt binder, bituminous mixtures, conventional and SuperPave mix-design methods, material characterization and testing, fracture, fatigue, and permanent deformation, novel pavement materials and additives, and pavement recycling. (Lec. 2, Lab. 3) Pre: 347 or equivalent.

**549 Nonbituminous Transportation Materials and Mix-Design (3)**

Surficial and subgrade soils, mineral aggregates, Portland cement concretes, mix-design methods, material characterization and testing, fracture, fatigue, new nonbituminous pavement materials and additives, and pavement recycling. (Lec. 2, Lab. 3) Pre: 347 or equivalent.

**551 Finite Element Analysis in Civil Engineering I (3)**

Direct stiffness method. Rayleigh-Ritz and Galerkin methods. Isoparametric elements. Frames, trusses, plane stress and strain. Bending of thin plates. (Lec. 3) Pre: 453 or permission of instructor.

**552 Structural Timber Design (3)**

Study of wood properties and design considerations. Design and behavior of beams, columns, beam-columns, and wood fasteners. Analysis and design of structural diaphragms, shear walls, and box beams. (Lec. 3) Pre: 354 or equivalent.

**561 Advanced Steel Design (3)**

Selected topics in structural steel design following the LRFD specification, including plate buckling and postbuckling, torsion, plate girders, plastic design, frame stability, tall buildings, composite design, and earthquake-resistant design. (Lec. 3) Pre: 460 or permission of instructor.

**562 Management of Highway Bridges (3)**

Comprehensive systems approach to management of highway bridges. Needs assessment, in-service monitoring and evaluation of bridges. Condition forecasting models and failure analysis. Life-cycle cost and benefit analysis, prioritization and optimization. (Lec. 3) Pre: permission of instructor.

**563 Prestressed Concrete (3)**

Theory of prestressed concrete including partial losses of prestress and long-term effects due to creep, shrinkage, and steel relaxation. Service and ultimate load evaluation of pre-tensioned and post-tensioned beam elements in flexure, shear, and torsion. Deflection, camber, and crack control evaluation. (Lec. 3) Pre: 465 or equivalent.

**564 Advanced Reinforced Concrete (3)**

Elastic and ultimate strength theory in flexure, shear, torsion, compression, and serviceability. Behavior and analysis of deep beams, corbels, slender and non-slender columns, biaxial bending, two-way slabs and plates. (Lec. 3) Pre: 465 or equivalent.

**565 Structural Dynamics (3)**

Simplified models and their equations of motion; analytical solution methods; Fourier analysis; Duhamel integral; nonlinearities; computer-oriented solution algorithms and their implementation. Applications. (Lec. 3) Pre: 453.

**568 (or MCE 568) Theory of Plates (3)**

Development of basic plate equations. Classical solution examples of rectangular and circular plates. Additional topics selected from orthotropic plates, large deflections, finite element, and numerical solutions. (Lec. 3) Pre: 220 and MTH 244.

**570 Sanitary Chemistry (3)**

Application of analytical chemistry to analysis of natural waters; physical chemistry and organic chemistry of aqueous media; chemical principles applicable to operations of sanitary engineering. (Lec. 3) Pre: permission of instructor.

**571 Sanitary Chemistry Laboratory (3)**

Applications of chemical laboratory procedures to control of water and wastewater treatment processes. (Lab. 9) Pre: 570.

**572 Biosystems in Sanitary Engineering (3)**

Microorganisms that constitute the biological systems in water pollution, water purification, and wastewater treatment. Application of principles of microbiology and biochemistry to analysis and design in fields of sanitary engineering and water resources. (Lec. 3) Pre: permission of instructor.

**573 Theory of Water Purification and Treatment (3)**

Principles of modern water purification and engineering practices. Aeration, deodorization, sterilization, coagulation, filtration, water softening, iron removal, disinfection, and corrosion control. (Lec. 3) Pre: permission of instructor

**575 Open-Channel Hydraulics (3)**

Analysis of uniform, critical, varied, and unsteady flow in open channels. Principles will be applied to open-channel design. (Lec. 3) Pre: 370.

**579 Soil Behavior (3)**

Shear strength of soils, including stress-strain and volume change behavior, stress paths, and drained and undrained behavior. Stability of slopes, including limit equilibrium approaches, analytical and numerical solutions. (Lec. 3) Pre: 381 or equivalent.

**580 Consolidation, Seepage, and Clay****Mineralogy (3)**

Consolidation of soils, permeability; steady state and transient seepage; stress distributions; clay mineralogy. (Lec. 3) Pre: 381 or equivalent.

**581 (or OCE 581) Experimental Geomechanics (3)**

Advanced methods and techniques of geotechnical testing. Behavior of granular and cohesive soils with determination of engineering properties. Interpretation, evaluation, and engineering applications of test data. Emphasis on shearing strength, consolidation, bearing capacity, earth pressures, seepage, and slope stability. (Lec. 3) Pre: 381 or equivalent.

**582 Seabed Geotechnics**

See Ocean Engineering 582.

**583 (or OCE 583) Advanced Foundation Engineering (3)**

Applications of soil mechanics principles to analysis and design of pile foundations, drilled piers, flexible retaining structures, braced excavations, cofferdams, miscellaneous advanced foundation problems. (Lec. 3) Pre: 381 or equivalent.

**584 Designing with Geosynthetics (3)**

Overview of geosynthetic materials, properties, test methods, and current standards. Design methods involving geotextiles, geogrids, geonets, geomembranes, and geocomposites. Applications to problems in geomechanics, geo-environmental engineering, and transportation-related fields. (Lec. 3) Pre: 381 or equivalent.

**585 Soil Dynamics (3)**

Vibration characteristics, wave propagation in soils, foundation vibration theory, foundation design for vibrating loads, vibration isolation, blast vibrations, dynamic soil properties, liquefaction potential, vibratory and dynamic compaction, computer applications. (Lec. 3) Pre: credit or concurrent enrollment in 483 or equivalent.

**586 Geotechnical Design of Waste Containment Systems (3)**

Engineering properties of soil waste. Design of waste containment cover systems, use of geosynthetics, liner and drainage materials, slurry walls, landfills, and leachate collection systems. Landfill design for earthquakes and stability. (Lec. 3) Pre: 381 or equivalent.

**587 Groundwater Flow and Seepage Pressures (3)**

Hydrodynamics of fluid flow through porous media. Analytical methods for steady and unsteady seepage in aquifers; theoretical analysis with practical modi-

fication of seepage problems involving foundations, drainage structures, earth dams, and dewatering. (Lec. 3) Pre: 381 or equivalent.

**588 Groundwater Hydrology (3)**

Quantitative methods of groundwater hydrology including determination of aquifer properties and yield. Modeling of groundwater systems for management quantity of water, movement of contaminants, and well design. Field and laboratory measurements. (Lec. 3) Pre: 370 and 381 or equivalent.

**591, 592 Special Problems (1-6 each)**

Advanced work under supervision of a faculty member arranged to suit individual requirements of the student. (Independent Study) Pre: permission of chairperson.

**594 Special Topics in Civil and Environmental Engineering (1-3)**

Intensive inquiry into a certain important field of current interest in civil and environmental engineering. (Lec. 1-3) Pre: permission of instructor.

**596 Numerical Methods in Structural Engineering (3)**

Methods of successive approximations and numerical procedures in the solution of stress, vibration, and stability problems in structural members. Non-uniform members, elastic supports, plates, torsion. (Lec. 3) Pre: permission of instructor.

**599 Master's Thesis Research (1-9)**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**601, 602 Graduate Seminar (1 each)**

Presentations by researchers and practicing professionals covering topics in various areas of civil engineering and related fields. Presentations and discussions of research by graduate students. (Seminar) Required of all full-time graduate students. May be repeated for a maximum of 2 credits. Fall semester: 601; spring semester: 602. Pre: graduate standing. S/U credit.

**641 Pavement Evaluation and Rehabilitation (3)**

Pavement performance concepts. Criteria for pavement evaluation. Measurement of pavement distress and structural capacity. Analysis and interpretation of pavement evaluation data. Correlation of data with performance ratings. Formulation and evaluation of maintenance and rehabilitation alternatives. (Lec. 3) Pre: 545 or equivalent.

**651 Design of Highway Bridges (3)**

Design specifications and analysis methods for highway bridges. Loads. Design of steel I-beam bridges, reinforced concrete bridges, and plate girders. Orthotropic analysis. Bridge details and substructure. (Lec. 3) Pre: 561, 465, and 453.

**652 Advanced Topics in Bridge Engineering (3)**

Load and resistance factor design of prestressed concrete bridges. Analysis and design of segmental concrete bridges using the span-by-span and the cantilever methods of construction. Time dependent effects. Long span bridges. Bridge condition assessment and rating. (Lec. 3) Pre: 651 or permission of instructor.

**657 Structural Stability (3)**

Introduction; principal forms of equilibrium paths and their stability; conservative elastic systems; buckling of prismatic members; imperfections; plastic deformations; postbuckling of frames and reticulated structures; numerical methods; catastrophe theory. (Lec. 3) Pre: permission of instructor.

**667 Structural Reliability (3)**

Probabilistic applications in structural analysis and design. Statistical models for forces and material strengths. Component and system structural reliability. Random vibration applications in structural engineering. (Lec. 3) Pre: permission of instructor.

**672 Water Pollution Control and Treatment of Wastewater (3)**

Wastewater characteristics, effects, and purification in natural water, government control strategies and impacts, cost of control, theory and mathematical concepts of secondary and tertiary treatment process, their limitations, and late developments. (Lec. 3) Pre: one year of chemistry and biology, MTH 243 and CVE 572 or their equivalents, and permission of instructor.

**677 Stream and Estuarine Analysis (3)**

Fundamentals and mathematical concepts of physical and biological factors applied to the evaluation of the pollution capacity of streams and estuaries. (Lec. 3) Pre: MTH 244.

**687 Geotechnical Earthquake Engineering (3)**

Seismology and seismicity; surface faulting and ground motion characteristics; response spectra; dynamic soil properties; dynamic response of soil layers, embankments, and slopes; influence of local soil conditions on site response; evaluation of design earthquakes; response analysis. (Lec. 3) Pre: credit or concurrent enrollment in 483 and graduate standing.

**688 Marine Geomechanics**

See Ocean Engineering 688.

**691, 692 Special Problems (1-6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits.

**694 Advanced Special Topics in Civil and Environmental Engineering (1-3)**

Intensive inquiry into a certain important field of current interest in civil and environmental engineering, requiring advanced sophistication of a 600-level course. (Lec. 1-3) Pre: permission of instructor.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Classics (CLA)**

*Section Head:* Professor Suter

**391 Ancient Laughter: The Comic Tradition in Greece and Rome (3)**

Introduction to the comic tradition in Western literature through its origins in Greece and Rome. Readings in English translation include examples of comic drama, novel, and satire. (Lec. 3) (A) [D]

**395 Greek Mythology: Gods, Heroes, and Humans (3)**

Nature and function of myth in the ancient world and today: ideas of divinity, relationship of divine to human, origins of cosmos and human society, male and female principles, power hierarchies, coming of age, the heroic experience. Theories of myth analysis. Readings in English translation. (Lec. 3) (A) [D]

**396 Myths of Rome (3)**

Nature and function of myth in Roman society; origins and influence of Romanitas as found in Roman literature: history, epic, lyric, novel. Roman religion: magic, animism, anthropomorphism, gods and goddesses. Readings in English translation. (Lec. 3) (A) [D]

**397 Greek Myth and Tragedy (3)**

Relationship between Greek myth and classical tragedy, birth and evolution of tragedy (ancient, medieval, French, English, American), employment of the same myth for different dramatic and political purposes. Readings in English translation. (Lec. 3) (A) [D]

*See also course listings under Greek and Latin.*

**Communication Studies (COM)**

*Chairperson:* Associate Professor Derbyshire

**100 Communication Fundamentals (3)**

Integrates basic theory and experience in a variety of communication contexts including public speaking, small groups, and interpersonal communication. Examines human differences in order to develop more effective communication skills. (Lec. 3) (EC) [D]

**202 Public Speaking (3)**

Theory, attitudes, and skills essential to effective and ethical public communication. Focus on research,

selection and use of evidence, construction of arguments, organization, audience analysis, and presentational skills. (Lec. 3) Pre: 100.

**207 Forensic Workshop (1)**

Open to students participating in speech or debate activities. (Practicum) Pre: permission of the director of debate. May be repeated for a maximum of 4 credits. Pre: 100.

**208 Argumentation and Debate (3)**

Introduces argumentation theory through the model of academic debate. Stresses critical-thinking skills including analysis, research, organization, and written and oral presentations. Debates are conducted on important social and political issues. (Lec. 3) Pre: 100.

**209 Great American Speeches (3)**

The study of historically significant ideas, issues, and causes through the critical analysis of selected American speeches. (Lec. 3) Pre: 100.

**210 Persuasion: The Rhetoric of Influence (3)**

Analysis of communication influencing beliefs, attitudes, and/or behavior. Investigation of rhetorical elements of logical, emotional, and ethical appeals. Study of elements critical for effective producers and consumers of persuasion. (Lec. 3) Pre: 100.

**221 Interpersonal Communication (3)**

Examines basic theory and skills, including impact of perception, self-concept, listening, nonverbal messages, and language on interpersonal communication, including conflict, relationship development, friendship, family, and romantic relationships. (Lec. 3/Online) Pre: 100.

**231 Oral Interpretation of Literature (3)**

Recognition and appreciation of content and communication of thought and emotion through oral reading. Practice in the analysis and interpretation of poetry and prose fiction. (Lec. 3)

**251 Small Group Communication (3)**

The study of communicative functions in the small group setting. Includes group dynamics, leadership, problem solving, and decision making. Emphasis on theory and application. (Lec. 3/Online) Pre: 100.

**271 Web Design and Programming (4)**

For students who want to learn to communicate effectively using Web development technology. Explores principles and techniques of client-side programming using XHTML, CSS, and JavaScript following leading-edge standards. Includes designing for Web standards, accessibility, usability, and workflow for Web design. (Lec. 2, Lab. 4)

**302 Advanced Public Speaking (3)**

Advanced study of public speaking and speech writing. Speaking in television and business settings. Speaking with a manuscript, writing speeches for others, and speech criticism. (Lec. 3) Pre: 202.

**307 Audio Communication in the Media (3)**

Examination of techniques and production of audio communication. Explores elements of audio communication including radio drama, commercials, news reporting, sports commentary, monologues, narration, and voice-over work. (Lec. 3)

**308 Advanced Argumentation and Debate (3)**

Analysis of the theories of argumentation through specialized forms of debate. Use of legislative, legal, and other situationally specific forms of debate to apply the theories of argumentation. (Lec. 3) Pre: 208 or permission of instructor.

**310 Contemporary Oral Communication (3)**

Analysis of contemporary rhetorical theories as they relate to speaking in business, civil rights, education, government, labor, law, and religion. Focus each semester on a critical contemporary issue. (Lec. 3) Some topics may be offered online. May be repeated for credit.

**316 Communication Criticism (3)**

Study of select methods in the evaluation of communication. Critical methods include but are not limited to rhetorical, media, cultural, and various critical theories of race and gender. 316A Rhetorical Criticism. May be offered online. 316B Television Criticism. Pre: 202 and 208 or 209 or 210. May not be repeated.

**322 Gender and Communication (3)**

Survey of theories and research on gender and communication. Examines interface of gender and human interaction in interpersonal, group (Including family), educational, organizational, mass media, and social movement contexts. (Lec. 3/Online)

**324 Nonverbal Communication (3)**

Examines nonverbal communication codes, including their structures, usages, and interrelationships. Stresses student understanding, analysis, and application of nonverbal communication through lecture, discussion, and experiential activities. (Lec. 3) Pre: 202 or 221.

**325 Communication in Interviewing (3)**

Theory and practice of interviewing as planned communication in different settings for various purposes, including research, professions, and employment. Human diversity, ethics, interpersonal dynamics, and writing are emphasized. (Lec. 3) Pre: 202.

**326 Family Communication (3)**

Examines family communication from a symbolic interaction and systems theory perspective. Focuses on primary family functions, including cohesion, and on case studies. (Lec. 3) Pre: 202 and 221 or permission of instructor.

**332 Oral Interpretation of Poetry (3)**

Practice in the oral interpretation of poetry through oral performance and written analysis. (Lec. 3) Pre: 231 or permission of instructor.

**333 (or AAF 333) Oral Interpretation of Black Literature (3)**

Study and oral presentation of literature by black American authors. Class performances, discussion, reports, and analysis of the literature. (Lec. 3) 231 recommended.

**340 Electronic Media Programming (3)**

Overview of various aspects of the operation of radio, television, and cable TV, including industry structure, audience measurement (ratings), programming, and promotion. (Lec. 3) Pre: junior standing.

**341 Documentary Pre-production (3)**

Understanding the documentary form in both its historic and modern context. Basic camera, shooting, and interviewing techniques are studied. Research and writing a documentary proposal required. (Lec. 3) Pre: junior standing.

**342 Documentary Production (3)**

Builds on work completed in 341. Field camera operation, lighting, archival materials, writing, directing, producing, and editing a documentary short on a topic researched and pre-produced in 341. (Lec. 3) Pre: 341.

**346 Social and Cultural Aspects of Media (3)**

Explores social and cultural dimensions of media. Includes case studies of print, television, film, video, and computer-mediated communication. (Lec. 3) Pre: junior standing or permission of instructor.

**351 Oral Communication for Business and Professions (3)**

Examination of business and organizational communication. Emphasis on channels of communication, communication barriers, leadership, and the development of communication skills for business and professions. (Lec. 3)

**354 International Business Communications****Exchange**

See Business 317. May be offered online.

**361 Intercultural Communication (3)**

Study of cultural similarities and differences as they affect communication within and across cultural boundaries. (Lec. 3/Online)

**372 Dynamic Web Design and Programming (4)**

Leading edge Web-based information technology for communication in all disciplines. Technology will vary by semester, covering Microsoft or Open Source server-side programming technologies and databases, and relevant design and security issues. (Lec. 2, Lab. 4) Pre: 271 or permission of instructor.

**381 Research Methods in Communication (3)**

Basic concepts and techniques of communication research. Emphasis on analysis of existing communication research and on application of research processes to communication problems or phenomena. (Lec. 3/Online) Pre: 202 and 221.

**382 Communication Theory (3)**

A critical survey of social science-based communication theories; an examination of the nature, processes, and functions of communication theory in a variety of contexts. (Lec. 3) Pre: 100, 202 or 221.

**383 Rhetorical Theory (3)**

Surveys and analyzes rhetorical communication theories and theorists from classical to contemporary times and focuses on rhetoric's relationship with philosophy, knowledge, reason, science, technology, and culture. (Lec. 3) Pre: 202 and 221 or 210 recommended.

**385 Communication and Social Influence (3)**

Focuses on theories of social influence in interpersonal, group, and public settings. Topics include audience analysis, ethics, motivation, messages, psychological and rhetorical, principles, source credibility, and attitude change. (Lec. 3) Pre: 202, 210, 221, and junior standing or permission of instructor.

**391, 392 Honors Work (1-3 each)**

Thesis work or an equivalent independent project under faculty supervision for honor students. (Independent Study)

**402 Leadership and Motivation**

See Management 402.

**405 Humor in Communication (3)**

Examination of genres, history, content, structure, and performance styles of presentational comedy. Exploration of role of humor in society. Development of original materials for public performance. (Lec. 3) Not for graduate credit.

**407 Political Communication (3)**

Analysis of political communication in campaign and nonelection situations. Examination of ghost writing; content analysis, strategies, image-making of political speaking; TV and radio presentations; influences on and effects of political communication. (Lec. 3)

**409 Seminar in American Public Address and Criticism (3)**

Study of selected American speakers, speeches, and/or movements. Rhetorical analysis used to measure the impact of speakers, speeches, and social and political movements. (Seminar) Pre: 316A or 316B or 383.

**411 Advanced Rhetorical Theory (3)**

Advanced study of select contemporary rhetorical theories and their relevance to current topics in language, knowledge, philosophy, culture, modernity, and postmodernity. (Lec. 3) Pre: 383.

**414 The Rhetoric of Sports in Film (3)**

Studies the rhetoric of sports in film. Students identify and analyze rhetorical messages embedded in films that deal with sports as reflections of the filmmaker's vision by applying film and rhetorical theory. (Lec. 3/Online) Pre: 381 and 383. Not for graduate credit.

**415 The Ethics of Persuasion (3)**

Relation of persuasion to ethics is examined. Purposes, means, results, and contexts are considered in making rhetorical judgments of interpersonal, political, and institutional communication. (Lec. 3)

**421 Advanced Interpersonal Communication (3)**

Critical study of major issues and theories of interpersonal communication. Focuses on history, models, and research, including conversation, influence, intimacy, language, and relationships. (Lec. 3) Pre: 221.

**422 Communication and Conflict Intervention (3)**

An examination of the role of communication theories in conflict intervention in interpersonal, group, and organizational settings. Emphasis on applying theories through simulations, role plays, case studies, and discussions. (Lec. 3) Pre: 221 or 251.

**435 Directing Group Performance of Nondramatic Literature (3)**

Practice in Reader's Theatre and Chamber Theatre. Emphasis on direction as a rhetorical device in group work with nondramatic literature and compilation of scripts for individual and group performance. (Lec. 3) Pre: 231. In alternate years.

**440 Telecommunications Processes and Audience Behavior (3)**

Surveys theories and research concerning role of electronic mass media in contemporary society. Focuses on interplay between mass media content and audience behavior; provides framework for analyzing current telecommunications issues. (Lec. 3) Pre: 340.

**441 Race, Politics, and Media (3)**

Exploration of the complex dynamics of race relations and political discourse as contextualized in the media. Rhetorical methods of analysis are used to study contemporary media coverage of race issues. (Lec. 3/Online) Pre: 316A or 383.

**445 Television Advertising (3)**

Examination of theory and practice in television advertising. Students will acquire and analyze commercials made by professionals and create and produce television advertisements. (Lec. 3) Pre: 210. Not for graduate credit.

**446 Media Theory (3)**

Examines major theoretical approaches to the study of media. Includes perspectives on media institutions, media texts, and media audiences. (Lec. 3)

**450 Organizational Communication (3)**

Surveys theory and practice of communication in organizations. Examines interface of organizational, management, and communication theories. Explores human interaction, flows, and formats in organizations; stresses student analysis of organizational communication. (Lec. 3) Pre: 251.

**461 Managing Cultural Differences in Organizations (3)**

Exploring how to manage cultural differences in organizations and to adapt to culturally diverse organizations by applying the skills of intercultural sensitivity and intercultural competence. (Lec. 3) Pre: 361 or permission of instructor. Not open to students who have credit for BUS 448, MBA 579.

**462 Communication and Global Society (3)**

Exploring various aspects of the relationship between communication and globalization, including a new sense of community, cultural diversity, cultural identity, global media, and global citizenship. (Lec. 3/ Online) Pre: six credits in communication or permission of instructor.

**471, 472 Internship in Communication Studies (1-3 each)**

Provides the student with direct supervised participation in a variety of communication situations and occupations. (Practicum) Pre: 18 credits in communication studies and permission of chairperson. S/U only.

**491, 492 Special Problems (1-3 each)**

Selected areas of study pertinent to communication. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Independent Study) Pre: permission of chairperson.

**501 Communication Theory (3)**

Discusses the significance of theory to the understanding of communication. Gives an overview of select major theories applicable to the study of communication. Explores the relationship between theory and research and investigates emerging theories and applications of theory to emerging forms of communication. (Seminar)

**502 Communication Methods (3)**

Explores research methods to understand communication phenomena, critique and analyze the value of communication studies, and independently conduct research to answer communication questions and problems. (Seminar)

**503 Graduate Practicum Teaching Communication Seminar (1)**

Practicum for students teaching postsecondary courses in communication. Provides pedagogical training through discussion, observation, and critique. Development and practice of skills, strategies, and pragmatic aspects of teaching in a university community. S/U credit. Offered fall and spring semesters. Must be taken for a total of 3 credits. (Seminar) Pre: communication studies graduate teaching status.

**510 Seminar in Interpersonal Communication (3)**

In-depth examination of a topic in interpersonal communication. Students review and discuss appropriate literature and author a major research paper.

(Seminar) May be repeated under a different topic. Pre: graduate standing or permission of instructor. Every second or third semester.

**520 Seminar in Media Studies (3)**

In-depth examination of a topic in mass or electronic media, or new information technologies. Students review and discuss appropriate literature and author a major research paper. May be repeated under a different topic. (Seminar) Pre: graduate standing or permission of instructor.

**530 Seminar in Organizational Communication (3)**

In-depth examination of a topic in organizational communication. Students will review and discuss appropriate literature and author a major research paper. May be repeated once under a different topic. (Seminar)

**540 Seminar in Public Discourse (3)**

In-depth examination of a topic in public discourse. Students will review and discuss appropriate literature and author a major research paper. May be repeated once under a different topic. (Seminar)

**591, 592 Independent Study (1-3 each)**

Students will work with faculty on independent research projects designed to enhance their research skills and further emphasize the content area most germane to the student.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Communicative Disorders (CMD)**

*Chairperson:* Professor Singer

**260 Introduction to Speech and Language Disorders (3)**

Introduction to speech and language disorders in children and adults; overview of symptomatology, assessment, and treatment; study of the professions of speech-language pathology and audiology. For students in communicative disorders, education, psychology, and other health-related fields. (Lec. 3)

**261 Survey of Hearing and Deafness (3)**

Introduction to the science of audiology. Pathologies of the hearing mechanism, basic methods of audiology, interpretation of the audiogram, hearing aids, and rationale and methods in hearing conservation programs. (Lec. 3)

**275 Gestural Communication (3)**

Visual language systems with emphasis on the chirology and syntax of Ameslan, and levels of language among deaf communicators; finger spelling and sign language for educational, rehabilitative, and artistic goals studied. (Lec. 3) Pre: junior or graduate standing.

**372 Auditory and Speech Mechanisms (3)**

Structure and function of the organs of hearing and speech as they relate to normal and pathological communication; theories of cortical involvements, central and peripheral nervous systems relevant to rehabilitation procedures. (Lec. 3) Pre: junior standing.

**373 Phonetics (3)**

International Phonetic Alphabet; analysis of phonetic and phonemic elements in major American English dialects; practice in transcription of standard and defective speech. (Lec. 3) Pre: junior standing.

**374 Communication Processes (3)**

Psychological and cognitive processes basic to language and communication; models of language processing; explorations into biological and social bases. (Lec. 3) Pre: junior standing.

**375 Language Development (3)**

Development phenomena in speech and language; causal factors of delayed speech and language; survey of evaluative and rehabilitative programs for children with deviant language development. (Lec. 3) Pre: junior standing.

**376 Hearing and Speech Science (3)**

Physical properties and speech signal, analysis of the physical bases of speech production and speech perception. (Lec. 3) Pre: 373.

**377 Functional Neuroanatomy (3)**

Examination of the brain and spinal cord, emphasizing connection and functions of the neural system. This course is designed for communicative disorders majors. (Lec. 3) Pre: 372 and junior standing.

**440 Advanced Head and Neck Anatomy**

See Dental Hygiene 440.

**454 Rehabilitative Audiology (3)**

Theoretical and methodological approaches to aural rehabilitation of the adult with impaired hearing. Topics include use of amplification, speechreading, assistive listening devices, auditory training, and case management. (Lec. 3) Pre: 260, 261, and three of the following—372, 373, 374, 375, 376—and senior or graduate standing with 551 as prerequisite for graduate standing.

**465 Clinical Methods in Communicative Disorders (4)**

Observation of diagnosis and treatment of communicative disorders; developing interviewing, report writing, and counseling techniques; introduction to diagnostic procedures; establishing therapeutic goals, treatment, and remediation of various disorders. (Lec. 4) Senior or graduate standing only. Pre: 260, 261, and three of the following—372, 373, 374, 375, 376. Not for graduate credit in communicative disorders.

**491, 492 Special Problems (1-3 each)**

Selected areas of study pertinent to communicative disorders. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Independent Study) 491: S/U credit.

**493 Cultural and Linguistic Diversity in Communicative Disorders (3)**

Application of concepts and information from the study of cultural and linguistic diversity to issues involving communicative incompetence and disorder. (Lec. 3)

**504 Research in Communicative Disorders (3)**

Types of research in speech pathology, audiology, and communication science; critiques of representative models with special emphasis on experimental research; individual pilot projects or master's thesis. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor.

**505 Issues in Audiology Private Practice (3)**

Issues fundamental to the development of private practice in audiology, including ethical, demographic, and financial issues. (Lec. 3) Pre: permission of instructor. Offered spring.

**550 Audiology for Speech-Language Pathologists A,B,C (1-3)**

Introduction to audiology for the speech-language pathology graduate student. Hearing disorders, hearing assessment, child and adult aural rehabilitation. Modular format with variable credits. (Lec. 1-3) Offered once per year.

**551 Measurement of Hearing I (4)**

Diagnostic protocols for routine audiologic assessment including pure tone, speech, and immittance procedures. Discussion of etiology and symptomatology of hearing disorders. (Lec. 4) Pre: 372, 373, 374, 375, and 376; graduate standing or permission of instructor.

**552 Measurement of Hearing II (4)**

Behavioral assessment of peripheral and central auditory function, including speech recognition, immittance, site-of-lesion, otoscopy, speechreading, and pseudohypacusis testing. (Lec. 4) Pre: 551 or permission of instructor. In alternate years.

**553 Pediatric Audiology (3)**

Theoretical and methodological approaches to the identification and management of children with auditory disorders. Topics discussed include auditory development, audiometric evaluation, and hearing aids. (Lec. 3) Pre: 551 or permission of instructor. In alternate years.

**554 Advanced Rehabilitative Processes for Hearing Impaired (3)**

Advanced techniques and technology in aural rehabilitation including family-based management,

multidiscipline approaches, and complex assistive devices. (Lec. 3) Pre: 454 and 551. Offered spring.

**555 Hearing Aids I (3)**

Introduction to wearable hearing aids. Topics include basic electronics, speech acoustics, types of hearing aids and their appropriateness, electroacoustics and psychoacoustics, and an overview of electroacoustic selection. (Lec. 3) Pre: 372, 373, 374, 375, and 376; graduate standing or permission of instructor. In alternate years.

**556 Hearing Aids II (3)**

Application of technological and behavioral strategies in fitting hearing aids, including aid selection and delivery, counseling, assessment of wearer performance, marketing, and legal issues. (Lec. 3) Pre: 555. In alternate years.

**557 Electrophysiological Measures in Audiology (4)**

Basic electrophysiological assessment procedures and instrumentation. Otoacoustic emissions, electrocochleography, auditory brainstem response, and middle, late, and steady-state auditory evoked potentials. (Lec. 4) Pre: 551 or permission of instructor. In alternate years.

**560 Voice Disorders (3)**

Etiology and symptomatology of vocal pathology; intervention strategies for organic and functional voice disorders; emphasis on rehabilitation team approach to voice-resonance problems associated with cleft palate. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor.

**561 Phonological Disorders (3)**

Assessment, design, and implementation of therapeutic management programs for various speech production disorders at the articulatory and phonological levels. (Lec. 3) Pre: 372, 373, 374, 375, or equivalent, or permission of instructor.

**562 Speech-Language Pathology for Audiologists A,B,C (1-3)**

Speech-language pathology for audiology students. Language disorders in children, speech sound disorders, speech/language change and disorders in adults. Modular format with variable credits (Lec. 1-3) Offered alternate years in the spring semester.

**563 Language Disorders in Infants and Toddlers (3)**

The speech-language pathologist's role and responsibilities in the diagnosis and treatment of infants and toddlers (0-3) either at risk for or exhibiting bona fide communication delays or disorders; family-centered approaches to intervention. (Lec. 3) Pre: graduate standing, completion of 375 (language development) or equivalent or permission of instructor. Offered alternate years in the spring semester.

**564 Language Disorders in School-Aged Children (3)**

Study of communication deficits in learning-disabled school-aged children; differential diagnoses; assessment of cognitive functioning; language processing and discourse; and therapeutic strategies for training abstract and functional language. (Lec. 3) Pre: graduate standing or permission of instructor.

**569 Test and Measurement in Speech-Language Pathology (3)**

Procedures for evaluation and diagnosis in speech-language pathology. Psychometric considerations in testing. Implications of evaluation information for differential diagnosis, prognosis, referrals, and therapeutic programs. Multicultural considerations in the diagnostic process. (Lec. 3) Pre: 372, 373, 374, 375, 465 or equivalent; graduate standing or permission of instructor.

**570 Clinical Practicum in Communicative Disorders (1-5)**

Supervised assessment and rehabilitation procedures with persons experiencing communicative disorders in speech-language pathology and/or audiology. Practicum sites scheduled on campus and within hospital, school, institutional, and private settings. (Practicum) Pre: graduate standing, 25 observation hours, and appropriate course work.

**571 Medical Speech-Language Pathology (1)**

Prepares students to work as speech-language pathologists in medical settings. Focus on scope of practice, ethics, and the coordination, prioritizing, and delivery of clinical services in an interdisciplinary environment. (Seminar) Pre: graduate standing. S/U only.

**572 Pathologies of the Auditory System (3)**

Diagnostic implications of audiology for various organic disorders; supportive audiological information relevant to medical and surgical interventions; differential data associated with otosclerosis, Meniere's disease, VIIIth cranial nerve tumors, and malingering. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. In alternate years.

**574 Hearing Conservation (2)**

The auditory and nonauditory effects of noise on human beings. Hearing conservation plan development and monitoring as well as legal issues will be reviewed. (Lec. 2) Pre: permission of instructor. Offered spring.

**575 Management of Deaf and Special Populations (3)**

Identification of needs related to health, communication, and quality of life in deaf and special populations. Management strategies and the audiologist's role will be described. (Lec. 3) Pre: 454 and 551. Offered spring.

**576 Cochlear Implants (2)**

Concepts and issues related to cochlear implantation as a remediation for deafness in adults and children. Hardware, programming, rehabilitative, and surgical issues will be addressed. (Lec. 2) Pre: graduate standing in audiology or permission of instructor. Offered fall every third year.

**577 Vestibular Rehabilitation and Tinnitus Management (2)**

Management of the vertiginous patient to reduce symptoms and restore function. Tinnitus assessment and therapeutic strategies are reviewed. (Lec. 2) Pre: 454, 551, and 572. Offered spring.

**580 Augmentative and Alternative Communication (2)**

Review of unaided (manual) approaches to communication. Discussion of aided methods using communication boards or other mechanical electronic devices. (Lec. 2) Pre: graduate standing or permission of instructor.

**581 Dysphagia (3)**

Basic introduction to the knowledge and skills needed by speech-language pathologists providing clinical services to dysphagic patients in medical settings. (Lec. 3) Pre: graduate standing or permission of instructor.

**582 Motor Speech Disorders (3)**

Neurosystem pathologies and mechanisms affecting speech. Prepares students to diagnose, assess, and treat adults with acquired motor speech disorders. (Lec. 3) Pre: graduate standing or permission of instructor.

**583 Acquired Cognitive Communication Disorders (3)**

Study of acquired cognitive problems resulting from neurological disorders and diseases; differential diagnoses; assessment of the domains of cognition; and therapeutic strategies for cognitive rehabilitation. (Lec. 3) Pre: graduate standing.

**584 Language Disorders in Developmentally Young Children (3)**

Study of communication deficits in developmentally young and multi-handicapped children; types of language problems; differential diagnoses; assessment of conceptual requisites and concrete language skills; and interactive therapeutic strategies. (Lec. 3) Pre: graduate standing or permission of instructor.

**585 Language Disorders in Adults (3)**

Provides basic information on the characteristics, assessment, and treatment of adults with acquired language disorders secondary to stroke, head injury, and progressive neurological diseases. (Lec. 3) Pre: graduate standing or permission of instructor.

**592 Disorders of Fluency (3)**

Study of nature and causes of stuttering; analyses of current theories and research concerning stuttering and cluttering; development of a rationale for diagnosis, case selection, and intervention. (Lec. 3) Pre: graduate standing and/or permission of instructor.

**593 Multicultural Issues in Communicative Disorders (1)**

Exposure to state-of-the art clinical practices with individuals from diverse backgrounds. Attention paid to developing "cultural sensitivity" and an awareness of the cultural and bilingual influences on assessment and intervention decisions. (Lec. 1)

**594 Counseling in Communicative Disorders (1)**

Considerations in counseling in speech-language pathology and audiology. Multiple factors influencing communication between client/family and professionals. Study of clinical skills in counseling. Ethical and professional issues. (Lec. 1) Pre: graduate standing or permission of instructor. In alternate years.

**595 Instrumentation and Computer Use in Communicative Disorders (1)**

Topics in applied instrumentation and computer use for students in speech-language pathology and audiology. Practical experience in calibration of instruments and the use of current professional software. (Lab. 2) Pre: graduate standing or permission of instructor. In alternate years.

**598 Special Problems (1-6)**

Selected areas of study pertinent to communicative disorders. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Independent Study) Pre: graduate standing.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**658 Advanced Electrophysiological Assessment of Hearing (4)**

Study of the most current research regarding electrophysiological assessment of hearing. Detailed consideration of such issues as stimulus variables, age, sex, sleep state, etc. Consideration of the neurophysiology underlying the measured electrical potentials. Must be taken concurrently with 659. (Lec. 4) Pre: graduate standing in audiology or permission of instructor. Offered fall every third year.

**670 Audiology Residency (6)**

Full-time equivalent off-campus clinical residency in audiology. Direct clinical experience with on-site supervision plus oversight by URI faculty. Placements may vary and combine more than one site. (Externship) May be repeated for a total of 12 credits. Pre: graduate standing in audiology and completion of 570.

**691 Independent Study in Audiology (1-3)**

Selected areas of study pertinent to audiology. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Independent Study) Pre: graduate standing in audiology.

**698 Capstone Project in Audiology (3)**

This registration purposes to tie together classroom and clinical experiences. Discussions will be based on externship experiences. A major paper on one clinical problem chosen by the student will be presented to students and faculty in audiology. (Seminar) Pre: graduate standing in audiology.

**Community Planning (CPL)**

Chairperson: Professor Green

**202 (or GEG 202) Introductory Urban Geography: Understanding Cities (3)**

Introduction to urbanization processes, primarily in North America; national settlement systems; intra urban form; migration, racial, ethnic, gender, and class segregation; urban economics; environmental issues; planning and governance; urban applications of GIS. (Lec. 3) (S) [D]

**210 Introduction to Planning and Community (3)**

Introductory course for community planning minor. History of urban development, management and planning of cities and towns in the United States. Discussion of contemporary planning issues in urban areas. (Lec. 3)

**300 (or NRS 300) Introduction to Global Issues in Sustainable Development (3)**

Role of the United States in development assistance to foreign nations. Topics include foreign aid, sustainable development, transfer of technology, and international career opportunities. (Lec. 3) (FC) [D]

**391, 392 Directed Study in Community Planning (1-3)**

Independent work in planning for individual students or groups. (Independent Study) Pre: 210 or 410 or permission of instructor.

**397 Field Work in Community Planning (1-3)**

Field work as arranged. The student works as a part-time intern in a planning agency under the supervision of a faculty advisor. (Practicum) Pre: 210 or 410 or permission of instructor.

**410 Fundamentals of Community Planning Practice (3)**

The development of the planning profession in the United States, and the elements of planning practice. The application of planning principles, methods, and techniques pertinent to contemporary urban problems. (Lec. 3)

**434 (or MAF 434) Introduction to Environmental Law (3)**

Surveys issues arising out of laws designed to protect the environment and manage resources: right to a decent environment, government regulation versus private property rights, citizen participation in planning environmental controls. (Lec. 3) Primarily for students not enrolled in the graduate curriculum in community planning and area development.

**475 (or GEG 475) The Revolutionary City:****Cuba (3)**

Taught in Cuba, summer session. Theory and practice of Cuban urbanization. Cities in the revolutionary relationship between city and country, morphology of Cuban cities, residential differentiation, housing, community activism, and Cuban urban policy. Field trips to Cuban cities (Lec. 3) Pre: permission of instructor. Application required. Not for graduate credit.

**487 (or NRS 487) International Development Internship (1-6)**

Supervised participation in programs related to sustainable international development. Minimum 35 hours of internship per credit. (Practicum) Pre: 300 and/or permission of instructor. Not for graduate credit. S/U only.

**495 (or NRS 496) International Development Seminar (3)**

Seminar in sustainable international development for advanced-level students interested in international development. (Seminar) Pre: 300 and/or permission of instructor. Not for graduate credit.

**498 Community Planning Seminar (3)**

Seminar in community planning from an interdisciplinary perspective. (Seminar) Pre: 210 or 410 or permission of instructor. Not for graduate credit.

**501 Introduction to Community Planning Practice (3)**

The development of community planning in the United States, history of governmental planning and evaluation of the planning profession, and the elements of planning practice. (Lec. 3)

**510 Community Planning and Political and Social Change (3)**

Introduction to systems and central theories of determinants for social and planned change in urban and urbanizing communities. Focus on methodologies for political and social assessments. (Seminar) Service learning. Pre: 523 or permission of instructor.

**511 Planning and Natural Environmental Systems (3)**

Introduction to theories, methodologies, and substantive concerns of environmental resource analysis with attention given to coastal environmental issues. Focus on land, soils, watersheds, water quality, vegetation, air quality, wildlife, noise pollution. (Lec. 3)

**512 Development of Human Settlements (3)**

Structure, functions, and development of human settlements. Classical and contemporary urban theory. Emphasizes political economy of urbanization as a historical process tied to our other social processes. (Seminar)

**516 Seminar on the Urban Waterfront**

See Marine Affairs 516.

**522 Planning Law (3)**

General review and discussion of legal principles and thought concerned with property rights, political power, and the legal aspects pertinent to the planning and development of public and private activities. (Lec. 3) Pre: second-year graduate standing or permission of instructor.

**523 Planning Theory (3)**

Critical survey of planning theories and contemporary planning concepts. Values, assumptions, and processes of various planning paradigms as related to decisions in community planning. Specific emphasis on values and ethics in planning theory. (Seminar) Service learning.

**525 Introduction to Planning Methods (4)**

Application of basic quantitative methods in planning: collection, analysis, and presentation of demographic, housing, and economic data. Introductory survey techniques. Introduction to computer applications in planning. (Lec. 3, Lab. 2) Pre: one course in statistics or permission of instructor.

**526 Techniques and Methodologies of Planning Research (4)**

Elementary social science research methods. Introduction to methodological approaches, research design, quantitative and qualitative data collection, and computerized data analysis in community planning and related urban social science. (Lec. 3, Lab. 2) Pre: 525.

**530 Urban Design and Public Policy (3)**

Significant concepts of historical and contemporary urban form ranging from entire cities to architectural details. Emphasis on urban design methods, process, and elements. Alternatives for implementation of urban design projects. (Lec. 3)

**536 International Comparisons in Urban and Regional Planning (3)**

Urban and regional development issues and policies in advanced and developing countries. Emphasis on population growth, urbanization, and spatial development. (Seminar) In alternate years.

**537 (or EEC/REN 532) Land Resources Economics (3)**

The study of economic relationships of human and scarce natural and human-made resources. Supply and demand, rent theory, resources conservation, and the impact of public policy and law. (Lec. 3)

**538 Site Planning (3)**

Site analysis and planning, including street design, principles of house grouping, and residential subdivision layout. Site planning standards for office development and shopping centers. (Lec. 3)

**539 Environmental Law (3)**

Analysis of specific environmental issues and policies including facility siting, land use and constitutional issues, comprehensive planning, public trust doctrine, concurrence, and state impact assessments. Independent research and presentation required. (Lec. 3)

**540 Community-Based Housing (3)**

Analysis of local housing needs; issues and perspectives in the context of federal and nonfederal program activities. Review of public-purpose strategies to provide housing that meets community needs. (Seminar) Pre: graduate standing or permission of instructor.

**542 Housing and Community Development Law (3)**

Examination of housing and community development laws through cases and readings. Focuses on the laws and programs that have been developed to address the problem of providing affordable housing in the United States. (Seminar) Pre: graduate standing or permission of instructor.

**543 Methods of Social Policy Analysis (3)**

Methods and techniques of social public policy analysis as applied to social problems and the evaluation of policy options, programs, and quality of life. (Seminar) Pre: 624 or permission of instructor. In alternate years.

**545 Land Development Seminar (3)**

A study of land management techniques including zoning, subdivision regulation, and land suitability and analysis; their use and environmental implications in land and water development. (Seminar) Pre: 511 or permission of instructor.

**546 (or CVE 546) Urban and Rural Transportation (3)**

Issues confronting planning for urban and rural transportation systems; the variety of policies that governments pursue in addressing issues and problems; technical and political constraints, transportation studies, and demand analysis techniques. (Lec. 3) Pre: 410 or 501 or permission of instructor. In alternate years.

**549 Seminar in Ecological Planning (3)**

Advanced seminar in ecological planning. Topics include hazardous waste, power plant siting, major transportation facilities, solid waste, aquifer protection, among others. Particular emphasis on wetlands and marine and coastal settings. (Seminar) Pre: 511 or permission of instructor.

**554 Community Development Funding and Subsidies (3)**

Analysis of strategies to access capital markets, protect the public good, and induce public benefits. Financial planning and feasibility analysis for government-subsidized development projects. Not for graduate credit in the College of Business Administration. (Seminar) In alternate years.

**555 Introduction to Economic Development Planning (3)**

Overview of economic development planning theory and practice. Emphasis on state and local planning in industrialized countries. The planning process and analytical techniques. Business, human resource, and community development strategies. (Seminar) Pre: 512 or permission of instructor. In alternate years.

**589 Master's Project Research (1-6)**

A substantial, self-directed planning project, by one or several students, under guidance of a major professor. Number of credits to be determined each semester. S/U credit.

**591, 592 Special Problems in Planning (1-6 each)**

Individual investigation of special problems in planning. (Independent Study)

**593-596 Special Problems in Planning (1-6 each)**

Group investigation of special problems in planning. (Independent Study)

**599 Master's Thesis Research (1-6)**

Number of credits is determined each semester in consultation with the major professor or program committee. S/U credit.

**624 Planning Policy and Management in Urban Areas (3)**

City planning as applied to urban policy in cities and metropolitan areas. Includes social, economic, and physical planning in the context of community development programs and management processes. (Seminar) Pre: 501, 511, 525, or permission of instructor.

**625 Central City Revitalization and Implementation (3)**

Advanced concentration course in central city planning. Focus on the problems of central cities and the causes of these problems. Emphasis on government policies to deal with the problems of the inner city. (Seminar) Pre: 624 or permission of instructor.

**631 Community Planning Studio (6)**

Team projects in planning and design; research and program development; field studies and problem analysis in local and state contexts. Development and evaluation of alternative solutions. (Studio 6) Pre: 525 and 526 or permission of instructor.

**691 Special Problems in Planning (1-6)**

Advanced work under the supervision of a member arranged to suit the individual requirements of the student. (Independent Study)

**Community Service (CSV)**

*Coordinator: Dean Richmond*

*Note: The total number of credits in community service that may be earned toward graduation may not exceed 12.*

**101 Introduction to Cultural Competence (3)**

Basic principles for students identifying their beliefs and clarifying their values about people who appear different in ways that provoke negative attitudes and behaviors. (Lec. 2, Lab. 2) Required service learning.

**102 Cultural Competence Experiences (3)**

Continuation and elaboration to foster cultural competence for students. (Lec. 2, Lab. 3) Required service learning.

**301 Course-Based Community Service (1-3)**

Learning through a community service experience related to course content. Experience defined by a job description and learning contract; includes orientation and reflection. (Practicum) Service learning. Pre: junior standing or above, or permission of instructor. Concurrent enrollment in a course that offers community service experience. May be repeated for a maximum of 6 credits. S/U only.

**302 Community Service at URI (1-4)**

Learning through a community service project that addresses a specific community need at the University. Project proposed and supervised by an instructor, and varies each semester. Includes mandatory seminar. (Practicum) Service learning. Pre: junior standing or above, or permission of instructor. May be repeated for a maximum of 8 credits.

**303 Service in the Community (1-4)**

Learning through a community service project that addresses a specific need in the off-campus community. Project proposed and supervised by an instructor, and varies each semester. (Practicum) Service learning. Pre: junior standing or above, or permission of instructor. May be repeated for a maximum of 8 credits. S/U only.

**Comparative Literature Studies (CLS)**

*Coordinator: Professor Manteiga*

**160 Literatures of the World**

See English 160. (A) or (L) [D]

**235 (or PHL 235) Modern Thought: Philosophy and Literature (3)**

Introduction to recent thought in philosophy and literature. Emphasis on Kierkegaard, Marx, Nietzsche, Freud, Sartre, and complementary literary texts. (Lec. 3) (L)

**250 Themes and Myths (3)**

Study of the evolution and transformation of a myth or theme in several national literatures. An introduc-

tion to a comparative and interdisciplinary approach. (Lec. 3) May be repeated for credit as often as topic changes.

**335 (or ENG 335) Interdisciplinary Studies in Comparative Literature (3)**

Study of the interrelationships of two or more national literatures (in translation) with another discipline. (Lec. 3) May be repeated for credit as often as topic changes.

**350 (or ENG 350) Literary Theory and Criticism (3)**

Introduction to theories of literature and their application in the analysis of selected texts. (Lec. 3) May be repeated for credit as often as topic changes.

**450 Studies in Comparative Literature (3)**

Detailed study of a literary movement, genre, or an aspect of literature as seen in two or more literatures. (Lec. 3) Pre: 6 credits in literature or permission of instructor. May be repeated for credit as often as topic changes.

**451 Advanced Topics in International Film Media (4)**

See Film Media 451.

**520 Literary Theory and Criticism (3)**

Metacriticism: literary criticism as theory and practice and the relationship between literary and critical discourse. (Seminar) Pre: graduate standing or permission of chairperson. May be repeated once with change of topic.

**530 Approaches in Comparative Literature (3)**

Study of theme/myth, movement/era, genre/forms in two or more literatures, or interrelations with other disciplines. (Seminar) Pre: graduate standing or permission of chairperson. May be repeated once with change of topic.

**597 Special Problems (1-6)**

Group and/or individual investigation of special problems in comparative literature studies. (Independent Study)

**599 Master's Thesis Research (1-6)**

Number of credits is determined each semester in consultation with the major professor and the Comparative Literature Studies Advisory Committee. (Independent Study)

*See other listings under English.*

**Computer Science (CSC)**

*Chairperson: Professor Kowalski*

**101 Computing Concepts (4)**

Capabilities and limitations of computers. Applications of computers in today's society. Overview of computing systems and programs. Students will complete several projects using a computer. (Lec. 3, Lab. 2/Online) Not open to students who have

credit in any college-level computer science course. Not for major credit in computer science. (MQ)

**110 Survey of Computer Science (4)**

How computers work. Design of a simple computer. Computer software, programming, and languages. Capabilities and limitations of computers. Artificial intelligence. (Lec. 3, Lab. 2) Open only to computer science majors with 4 or fewer credits in CSC courses.

**200 Computer Problem Solving for Science and Engineering (4)**

An integrated symbolic, numerical, and graphical approach to computer problem solving. Structured design; fundamental programming techniques. Computer algebra systems. Scientific, engineering, and mathematical applications. (Lec. 3, Lab. 2) Pre: credit or concurrent enrollment in MTH 131 or 141. Not for major credit in computer science. May not be taken for credit by students with credit in 201 or 211.

**201 Introduction to Computer Programming (4)**

Computer characteristics, algorithms, data representation, program development. Students will write several programs to solve numerical and non-numerical problems. (Lec. 3, Lab. 2) Pre: MTH 111 or equivalent. May not be taken for credit by students with credit in 200 or 211. Not for major credit in computer science. (MQ)

**211 Introductory Programming and Design (4)**

Problem specification, solution design, and algorithm development. Object-oriented programming and program structure. Functions, selection, iteration, recursion, classes, arrays, and files. Required programs will solve numerical and non-numerical problems. (Lec. 3, Lab. 2) Pre: prior experience with computers and programming and MTH 111 or equivalent. Intended for computer science and computer engineering majors.

**212 Data Structures and Abstractions (4)**

Abstract data types and data structures. Pointers, linked lists, stacks, queues, binary trees, and tables. Fundamentals of software engineering. Development of object-oriented programming techniques. (Lec. 3, Lab. 2) Pre: 211 and MTH 141. Intended for computer science and computer engineering majors.

**301 Fundamentals of Programming Languages (4)**

Organization of programming languages, data and control structures, syntax and semantics, compilers and interpreters. Block structured languages, recursion, parameter passing, run-time storage management. Procedural, functional, object-oriented, and logical languages. (Lec. 3, Lab. 2) Pre: 212.

**305 Software Engineering (4)**

Programming environments and methodologies for the design, development, testing, and mainte-

nance of large software systems. Student teams will develop a substantial software product from requirements to delivery using disciplined techniques. (Lec. 3, Project 3) Pre: 301.

**320 Social Issues in Computing (4)**

Discussion of the social and ethical issues created by the use of computers. The problems that computers solve and those that they produce. Ethics and responsibilities of the computer professional. (Lec. 4) Pre: 212, junior standing, or permission of instructor.

**340 Mathematical Foundations of Computer Science (4)**

Combinatorial techniques used in non-numerical computation and analysis of algorithms. Logic, proofs, enumerations, recurrence relations, graphs and networks, finite automata. Complexity analysis of several representative problems and algorithms for their solutions. (Lec. 4) Pre: 212 and credit or concurrent enrollment in MTH 215.

**350 Fundamentals of Mathematical Computation (4)**

Symbolic, numerical, and graphical approaches to mathematical computation. Pitfalls in numerical computation. Root finding. Numerical integration and differentiation. Approximation of functions. Interpolation and curve fitting. Linear systems. Ordinary differential equations. (Lec. 3, Lab. 2) Pre: 212 and MTH 215 and 243.

**402 Compiler Design (4)**

Grammars and languages; lexical analysis, parsing and translation, symbol tables, run-time storage administration, object code generation. Students will construct a compiler for a small programming language. (Lec. 3, Project 3) Pre: 301.

**406 Computer Graphics (4)**

Interactive raster graphics; hardware, software, and algorithms. Point plotting, line drawing, geometrical transformations, clipping and windowing. Three-dimensional graphics including curves, surfaces, perspective, hidden objects, shading. User interfaces; graphical programming environments. (Lec. 3, Project 3) Pre: 305, MTH 215 and 243.

**411 Computer Organization (4)**

Logical structure of computer systems viewed as a hierarchy of levels. Assembly language programming, assemblers, linkers, loaders. Computer architecture including digital logic, processor organization, instruction sets, addressing techniques, virtual memory, microprogramming. (Lec. 3, Project 3) Pre: 212 and 301 and either junior standing or permission of instructor.

**412 Operating Systems and Networks (4)**

General concepts underlying operating systems and computer networks. Topics include process management, concurrency, scheduling, memory management, information management, protection and

security, modeling and performance, networking and communication. (Lec. 3, Project 3/Online) Pre: 212 and 301 and either junior standing or permission of instructor.

**415 Introduction to Parallel Computing (4)**

Programming techniques to engage a collection of autonomous processors to solve large-scale numerical and non-numerical problems. Processor interconnections. Parallel programming languages and models. Performance measures. (Lec. 3, Project 3) Pre: 301. In alternate years.

**418 Information and Network Security**

See Electrical Engineering 438.

**436 Database Management Systems (4)**

Construction and management of large data systems. Data modeling, relational and object-oriented systems, main memory databases, query languages, query optimization, concurrency control, transaction management, distributed systems, disk organization, indexes, emerging technologies. (Lec. 3, Project 3) Pre: 301 or 412 or permission of instructor.

**440 Algorithms and Data Structures (4)**

Algorithm design and analysis, advanced data structures, computational complexity. Sorting, searching including hashing and balanced trees, string pattern matching, polynomial and matrix calculations, graph and network algorithms, NP-completeness and intractability. (Lec. 3, Project 3) Pre: 340.

**445 Models of Computation (4)**

Abstract models of computational systems. Classical models for uniprocessor, sequential, and stored program computers. New models based on recent advances in hardware, software, and communications and their implications in practice. (Lec. 3, Project 3) Pre: 340. In alternate years.

**447 Discrete Mathematical Structures**

See Mathematics 447.

**481 Artificial Intelligence (4)**

Theories, formalisms, techniques to emulate intelligent behavior using information processing models. Symbolic programming, search, problem solving, knowledge-based techniques, logic, theorem proving. Optional topics: natural language processing, machine learning, computer vision. (Lec. 3, Project 3) Pre: 301 or permission of instructor. In alternate years.

**485 Computer Forensics (4)**

The science, technology, procedures, and law of acquiring and analyzing digital evidence from computers and devices (Lec. 3, Lab. 3/Online). Pre: 412, or permission of instructor.

**486 Network Forensics (4)**

The science, technology, procedures, and law of acquiring and analyzing digital evidence from computer network activity (Lec. 3, Lab. 3). Pre: 485.

**491 Directed Study in Computer Science (1–4)**

Advanced work in computer science. Conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit.

**492 Special Topics in Computer Science (1–4)**

Advanced topics of current interest in computer science. (Lec. 1–4, Project 1–3) Pre: permission of instructor.

**499 Project in Computer Science (4)**

Supervised work on a capstone project in computer science that prepares students for careers in industry and graduate study. (Practicum) Pre: advanced standing in computer science and departmental approval. Normally taken twice in two consecutive semesters. May be repeated for a maximum of 8 credits. Not for graduate credit. S/U credit.

**501 Programming Language Semantics (4)**

Design, analysis, implementation, and comparative study of major programming language families. Topics include procedural and block-structured languages, interpretive languages, concurrency, functional languages, object-oriented programming, logic programming, dataflow languages and machines. (Lec. 3, Project 3) Pre: 301.

**502 Theory of Compilers (4)**

An advanced course in compiler construction covering advanced parsing techniques, compiler-writing tools, type checking and type inference, code optimization, and compiling nonstandard language features. (Lec. 3, Project 3) Pre: 402. In alternate years.

**505 Advanced Topics in Software Engineering (4)**

Lifecycle models; software development environments; project management. Metrics, performance, and testing. Paradigms for software design and architecture. Legal and ethical issues. (Lec. 3, Project 3) Pre: 305. In alternate years.

**509 Object-Oriented System Design (4)**

Object-oriented design and programming, the software engineering process. Traditional and current object-oriented design methods. Software reuse. Design tools. Impact of the technology on traditional software engineering. (Lec. 3, Project 3) Pre: 305 and working knowledge of an object-oriented language. In alternate years.

**511 Advanced Computer Organization (4)**

Evaluation of high-performance computer systems with respect to architectures, operating systems, and algorithms. High-speed conventional machines; array processors; multiprocessors; data flow machines; RISC architectures; VLSI-based machines. (Lec. 3, Project 3) Pre: 411. In alternate years.

**512 Topics in Distributed Systems (4)**

Advanced topics in distributed systems. Networking; standard distributed computing environments. Distributed computing algorithms. Concurrency and

threading. Real-time computing, scheduling, concurrency control, load allocation. (Lec. 3, Project 3) Pre: 412. In alternate years.

**517 Design and Analysis of VLSI Systems (4)**

Illustration and analysis of VLSI algorithms and architecture. Emphasis on design of very large-scale integrated circuits, related methodologies, and theoretical foundations. VLSI technologies, fabrication, automated design tools for various problems. (Lec. 3, Project 3) Pre: 411 and either 340 or 447. In alternate years.

**519 Computer Networks**

See Electrical Engineering 543.

**522 (or MIC 522 or STA 522) Bioinformatics I (3–4)**

Integrates computing, statistical, and biological sciences, algorithms, and data analysis/management. Multidisciplinary student research teams. Modeling dynamic biological processes. Extra project work for 4 credits. (Lec. 3, Project 3) Pre: major in a computing, statistical, or biological science or permission of instructor.

**525 Systems Simulation**

See Industrial and Systems Engineering 525.

**536 Topics in Data Management Systems (4)**

Current research and developments in database management systems. Relational, semantic, object-oriented, real-time, distributed, heterogeneous, and logic databases. Concurrency control, security, active rules, recovery, and integrity subsystems. (Lec. 3, Project 3) Pre: 436 or permission of instructor. In alternate years.

**541 Advanced Topics in Algorithms (4)**

Algorithm design techniques such as dynamic programming, greedy method, branch and bound. Linear programming; NP-completeness; graph algorithms; number theoretic algorithms; approximation algorithms for NP-complete problems; probabilistic and parallel algorithms. (Lec. 3, Project 3) Pre: 440 or 445. In alternate years.

**542 Mathematical Analysis of Algorithms (4)**

Mathematical techniques for the analysis of algorithms. Sums and products; finite difference calculus; properties of binomial coefficients; Stirling, harmonic, and Fibonacci numbers; recurrence relations; generating functions; asymptotic approximation. Case studies. (Lec. 3, Project 3) Pre: 440. In alternate years.

**544 Theory of Computation (4)**

Finite automata, pushdown automata, formal grammars and Chomsky hierarchy, Turing machines, computability, basics of complexity theory. Advanced topics including some of the following: cryptography, interactive proofs, circuit complexity, completeness for various complexity classes, relations among

complexity classes, new models of computation. (Lec. 3, Project 3) Pre: 440 or 445. In alternate years.

**547 Combinatorics and Graph Theory**

See Mathematics 547.

**548 Topics in Combinatorics**

See Mathematics 548.

**550 Computer Algebra (4)**

Symbolic mathematical computation; history, use, representation of information, algorithms and heuristics. Big number arithmetic, manipulation of polynomials and rational expressions; algebraic simplification; factoring; symbolic integration. Organization and implementation of computer algebra systems. (Lec. 3, Project 3) Pre: 350, 440. In alternate years.

**581 (or ELE 581) Special Topics in Artificial Intelligence (3)**

Topics of specialized or current interest, which may change. Topics may include expert systems, natural language processing, neural network models, machine learning. AI applications in remote sensing. (Lec. 3) Pre: 481 or permission of instructor. May be repeated with permission. In alternate years.

**583 Computer Vision**

See Electrical Engineering 583.

**585 Topics in Computer Forensics (4)**

Advanced topics in computer forensics. Emerging research, law, and techniques in acquiring and analyzing digital evidence from computers and devices. (Lec. 3, Lab. 3) Pre: 485, or permission of instructor.

**586 Topics in Network Forensics (4)**

Advanced topics in network forensics. Emerging research, law, and techniques in acquiring and analyzing digital evidence from computer networks. (Lec. 3, Lab. 3) Pre: 585.

**591 Directed Study in Computer Science (1–4)**

Advanced work in computer science conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit.

**592 Special Topics in Computer Science (1–4)**

Advanced topics of current interest in computer science. (Lec. 1–4, Project 1–3) Pre: permission of chairperson. May be taken more than once.

**593 Computer Science Seminar Series (1)**

Seminar discussions presented by faculty, graduate students, and outside speakers.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Dental Hygiene (DHY)

### 100 Introduction to Dental Hygiene (2)

An overview of the dental hygiene profession including basic dental anatomy, dental terminology, current infection control protocols, and preventive dentistry concepts. (Lec. 2)

### 350 Dental Health Education (3)

Educational philosophy, teaching methods, and acquisition of skills in methods of research. Investigation, review, interpretation, and critical evaluation of scientific literature as the basis for dental health education. (Lec. 3) For dental hygiene majors only.

### 440 (or CMD 440 or PHT 440) Advanced Head and Neck Anatomy (3)

Study of structure and function of human head and neck anatomy, supplemented by dissection laboratory. Emphasis on the musculoskeletal, visceral, nervous, and vascular systems related to dental hygiene and communicative disorders. (Lec. 2, Lab. 2) Pre: BIO 121 or equivalent.

### 464 Field Experience in Community Oral Health (3)

Directed field experience in dental health education in cooperation with community-based agencies. Weekly seminar. The experience will be defined by a job description and learning contract or letter of intent arranged by the instructor with the student and the agency supervisor. (Practicum) Pre: permission of instructor.

## Economics (ECN)

Chairperson: Professor Ramsay

### 100 Introduction to Economics (3)

General overview of concepts economists employ to address issues of public policy. Description of major institutions of present-day American economy. Historical approach to subject matter. (Lec. 3) (S) [D]

### 201 Principles of Economics: Microeconomics (3)

Principles underlying resource allocation, production, and income distribution in a market economy. Topics include demand and supply, consumer behavior, firm behavior, market structure, and elementary welfare analysis. Institutional foundations explored. (Lec. 3/Online) (S)

### 202 Principles of Economics: Macroeconomics (3)

Principles underlying aggregate demand and aggregate supply in a market economy. Topics include national income determination, inflation, unemployment, economic growth, and international trade. Institutional foundations explored. (Lec. 3/Online) Pre: 201 or equivalent. (S)

### 305 Competing Traditions in Economics (3)

Introductory exposure to the history of economic thought and also to competing schools of thought

within modern economics. Connections between present-day controversies and competing traditions are explored. Pre: 201, 202. May be taken concurrently with 202. Only offered in spring semester.

### 306 Introduction to Economic Research Methods (3)

Development of supplementary skills needed to carry out economic research. Topics include: 1) widely used computer operating systems, 2) economic data sources, 3) elementary mathematical and statistical techniques, and 4) library research methods. Pre: 201, 202. May be taken concurrently with 202. (S)

### 310 Economics of Sports (3)

Economic analysis of professional sports. Topics include sports and television, the collegiate foundation, franchise finance, athletes' compensation, and impact upon local public finance. (Lec. 3) Pre: 100, 201, an equivalent course, or permission of instructor. Offered fall.

### 323 Intermediate Microeconomics (3)

Theory of consumer behavior, the firm, market equilibrium, general equilibrium, imperfect competition, optimization over time, and linear models. Models of microeconomics are developed using calculus and linear algebra. (Lec. 3) Pre: 201, 202 and MTH 131 or 141. Offered spring.

### 324 Intermediate Macroeconomics (3)

Theory of consumption, investment, monetary and fiscal policy, static and dynamic models, economic growth, unemployment, and inflation. Macroeconomics developed using calculus and linear algebra. (Lec. 3) Pre: 201, 202 and MTH 131 or 141. Offered fall.

### 327 Intermediate Economic Theory: Income and Employment (3)

Measurement of national income. Theory of the determination of the general level of income, employment, and prices. Business fluctuations. (Lec. 3) Pre: 202 or 590 or permission of instructor. Not available for credit for students who have taken 324.

### 328 Intermediate Economic Theory: Pricing and Distribution (3)

Market conditions and forces affecting the pricing and production of goods and services, the allocation of resources, and the distribution of income. (Lec. 3) Pre: 201 or permission of instructor. Not available for credit for students who have taken 323.

### 334 Money and Banking (3)

Structure and functioning of monetary institutions. Analyses of monetary theories. The role of monetary policy. U.S. banking structure: its operations and functioning. (Lec. 3) Pre: 201 or permission of instructor. Offered fall.

### 337 Industrial Organization and Public Policy (3)

Historical and present attitudes and policies of various levels of government toward the changing

structure of American business. Emphasis on legal and economic concepts of business activity. (Lec. 3) Pre: 201 or 202 or permission of instructor. Offered spring in alternate years. Next offered 2008-09.

### 338 International Economics (3)

Theory and evidence on international trade and finance. Includes determinants and welfare effects of foreign trade, international investment, migration, exchange rates, and the balance of payments. (Lec. 3) Pre: 100 or 201 or permission of instructor. Offered spring.

### 342 Public Finance (3)

Examination of the theory and practice of public expenditures, revenues, and fiscal policy with major emphasis on federal fiscal affairs. (Lec. 3) Pre: 201 or 202 or permission of instructor.

### 344 (or PSC 344) International Financial Economics (3)

History, theory, and politics of the international financial system. Topics include the foreign exchange market, international banking, macroeconomic stabilization under fixed and floating exchange rates, exchange rate reform, and the global debt crisis. (Lec. 3) Pre: 100 or 202 or permission of instructor.

### 351, 352 Assigned Work (3 each)

Special work in economics when it can be arranged to meet the needs of individual students who desire independent work. (Independent Study) Pre: 201 or 202 or permission of instructor. S/U credit.

### 360 Health Economics (3)

Economic analysis of health services. Topics include demand and supply in markets for health care and insurance, government regulation, and performance of national health systems. (Lec. 3) Pre: 201. Offered fall of alternate years.

### 363 Economic Growth and Development (3)

Basic problems in economic growth and development of so-called backward or preindustrial countries. Emphasis on population trends, agrarian reforms, capital formation, international aid programs, respective roles of private and public enterprise. (Lec. 3) Pre: 201 or 202 or permission of instructor. Offered fall.

### 368 Labor Economics (3)

Impact of industrialization on workers; survey of the basic principles of labor market organization and operation; unemployment and remedies; wage determination under union and nonunion conditions. (Lec. 3) Pre: 201 and 202. Offered spring.

### 371 Economics in Islamic Societies (3)

Principles of Islamic economic systems, private property, and the market. Freedom of enterprise and role of the state. Comparison with capitalism and socialism. Pre: 201, 202 or permission of instructor. Offered spring.

**375 Introduction to Quantitative Methods I (3)**  
 Mathematical techniques used in modern economic theory. Linear algebra, the calculus of several variables, constrained maximization, and differential equations. Application to economic problems. (Lec. 3) Pre: 201 and 202 and MTH 131 or 141, or permission of instructor. Offered spring.

**376 Introduction to Econometrics (4)**  
 Application of econometric methods to economic problems. Econometric tools applied to micro- and macroeconomic problems. (Lec. 3, Lab. 2) Pre: 201 or permission of instructor. Offered fall.

**381 Radical Critiques of Contemporary Political Economy (3)**  
 Radical right and radical left critiques. Radical views on values, methodology, production planning, income distribution, economic power, the military-industrial complex, imperialism, and racial and sexual discrimination. (Lec. 3) Pre: 202 or permission of instructor. (S) [D]

**385 Economic Development of the United States (3)**  
 Developmental factors in American economic life introduce students to the past and present business environment. (Lec. 3) Pre: 201 or permission of chairperson.

**386 The Economics of Race, Gender, and Class (3)**  
 An economic examination of the historical interrelations of race, class, and gender issues in the United States. (Lec. 3) Pre: 100 or 201 or permission of instructor. Offered fall.

**402 Urban Economics (3)**  
 Analysis of selected economic problems of urban areas. Development of methodological approaches through discussion of policy issues. (Lec. 3) Pre: 201 or 202 or permission of instructor.

**415 Environmental Harms and Sanctions (3)**  
 Political economic analysis of criminal, civil, and administrative regulation and law in an ecological context. Topics include hazardous waste, environmental justice, wilderness preservation, and global issues. Pre: junior or senior standing.

**444 Applied Research in Economics (3)**  
 The application of economic theory, econometrics, and computing to specific problems. Emphasis on formulation of hypotheses in mathematical form, transformation into forms suitable for empirical testing, testing using the computer, report writing, and oral presentation. (Lec. 3) Pre: 323, 324, and 376.

**445 Senior Research Project (3)**  
 Collaborative group research under guidance of department member. Topic jointly selected by members of group, subject to faculty approval. Written report required. (Independent Study) Pre: final semester for majors in the economics B.A. and B.S. applied programs. Not for graduate credit.

**480 Seminar in Labor Studies**  
 See Labor Studies 480.

**515, 516 Economic Research (1-3 each)**  
 Independent research. (Independent Study) S/U credit.

**526 Economics of Labor Markets**  
 See Labor and Industrial Relations 526.

**527 Macroeconomic Theory**  
 See Environmental Economics 527.

**528 Microeconomic Theory**  
 See Environmental Economics 528.

**534 Information Sources and Uses in Labor Relations and Labor Economics**  
 See Labor and Industrial Relations 534.

**576 Econometrics**  
 See Environmental Economics 576.

**590 Principles of Economics (3)**  
 Survey of micro- and macroeconomic theory. (Lec. 3) Pre: graduate standing in accounting, labor and industrial relations, or M.B.A. program.

**628 Advanced Microeconomic Theory I**  
 See Environmental Economics 628.

**676 Advanced Econometrics**  
 See Environmental Economics 676.

## Education (EDC)

*Director:* Professor Byrd

**102 Introduction to American Education (3)**  
 Introduction to the fundamental structure, functions, and problems of American education. Emphasis on education as both a sociocultural phenomenon and an embodiment of philosophical commitments. Diversity, writing, and speaking focus. (Lec. 2, Rec. 1) Not for major credit in elementary or secondary education. (S) [D]

**250 Supervised Preprofessional Field Experience (1)**  
 Supervised early field experience and seminar for students wishing to explore one or more possible career choices in education. (Practicum) May be repeated for credit. S/U only.

**279 Career Development Seminar (1)**  
 Individualized approach to career concerns, skill identification, self-awareness, career development theory, decision making. Emphasis on understanding long- and short-term goals. (Seminar)

**302 Topics in Educational Studies (3)**  
 Consideration of basic purposes, values, and changes in American education as a means of analyzing selected topics drawn from foundational studies in education. Topics vary. (Lec. 3) Pre: sophomore standing or permission of instructor.

## The Psychology of Learning (3)

An analysis of learning with emphasis on principles and procedures applicable to any human teaching and learning situation. (Lec. 3) Pre: PSY 113.

**329 Music for the Elementary School Teacher**  
 See Music 329.

## Primary School Practicum (1)

Students apply methodology in a public school setting for grades K-2 for three hours each week for 10 weeks. Lessons are taught and principles of classroom management, individualized instruction, and integrated curriculum are applied. (Practicum) Pre: HDF 200 and acceptance into the early childhood education program. S/U only.

## Foundations of American Education (3)

An analysis of historical, social, and philosophical foundations of American education, emphasizing theory and practice in contemporary schools and the relevance and appropriateness of the educational values schools reflect. (Lec. 3) Pre: open to students admitted to concentrations in elementary or secondary education. Students must be accepted into the education program.

## Educational Measurements (3)

An analysis of concepts and procedures involved in creating, selecting, summarizing, and using tests and other measurement devices in educational settings. (Lec. 3) Pre: 312.

## Middle School Curriculum Assessment and Methods (4)

Contemporary middle school curriculum, assessment, methods, and research-based models are emphasized. Focus is on adolescents; teaming; thematic, integrated, interdisciplinary, standards-based instruction; differentiated instruction; and multiple intelligences. (Lec. 3 and 30 hours of field experience) Pre: prior or concurrent enrollment in 312 or 424 or 448 or permission of instructor. Undergrad/MA/TCP candidates must take this course, one or two semesters prior to student teaching, if seeking middle level endorsement.

## Development and Utilization of Instructional Materials (3)

Methods of developing and making classroom application of selected materials: nonprojected, projected, and audio. Specific attention to utilization in the social sciences, English, reading, the natural sciences, the humanities, arithmetic, and mathematics. (Lec. 1, Lab. 4) Pre: senior standing and 6 hours of education.

## Educating Students with Special Needs in Inclusive Settings (3)

Legislative, judicial, social, and psychological issues related to assessment, identification, and education of students with special needs in general education classrooms. (Lec. 3) Pre: acceptance into a teacher preparation program or teacher certification.

**403 Observation in a Middle Level Classroom (1)**  
Seminar and practicum (minimum of 30 hours) to observe teaching practices and adolescent behavior in middle school. Completion of a shadow study of an adolescent. Pre: concurrent enrollment in 569 or permission of instructor.

**415 Adolescents and Classroom Management (4)**  
Seminar and practicum addressing issues of adolescent development manifested in the classroom, emphasizing management strategies for learning and adolescent developmental needs. (Seminar and 30 hours of field experience) Pre: in- or pre-service major in secondary education or elementary education, or seeking middle level endorsement, or graduate level candidate, or permission of instructor.

**424 Teaching Literacy in the Elementary School (3)**  
Fundamental knowledge base in literacy development and instruction. Bridges theory and practice through exposure to a variety of methods and materials used to create a comprehensive literacy curriculum. (Lec.) Pre: prior or concurrent enrollment in 312, 512, graduate standing or permission of instructor. Service learning optional.

**425 Using Trade Books in the Reading and Writing Program (3)**

Instructional strategies for using trade books to develop skilled reading and comprehension, foster literary appreciation, connect literature to personal experience, and promote integration throughout the curriculum. (Lec. 3) Pre: credit or concurrent enrollment in 424, graduate standing or permission of instructor.

**426 Integrated Primary School Curriculum (4)**

Principles and practices of developing knowledge, skills, and activities in language arts/reading, math, science, social studies, music, art, and physical education/health. (Lec.) Pre: portfolio interview/acceptance into ECE teaching program. Concurrent enrollment in 350. Not for graduate credit in education.

**427 Methods and Materials in Elementary Teaching I (3)**

Language arts and reading principles and practices of guiding children in skillful use of basic means of communication (speaking, listening, writing, and reading). (Lec. 3) Pre: PSY 113 and 232, EDC 312, concurrent enrollment in EDC 428, and permission of director. Open only to elementary education majors. Not for graduate credit in education.

**428 Methods and Materials in Elementary Teaching II (3)**

Principles and practices of developing skills and knowledge in social studies, math, and science with elementary school children. (Lec. 3) Pre: PSY 113 and 232, EDC 312, concurrent enrollment in EDC 427, and permission of director. Open only to elementary education majors. Not for graduate credit in education.

**429 Emergent Literacy and Storytelling (2)**  
Theoretical foundations and practical applications of emergent reading, writing, and language development including field-based storytelling experiences at early childhood sites. Focuses on children birth to six years. (Lec. 2) Pre: portfolio interview/acceptance into ECE teaching program (except summer) and credit or concurrent enrollment in 424 (except summer). Spring enrollment limited to students admitted to ECE teaching program and scheduled to student teach the following fall. Not for graduate credit. Optional service learning.

**430 Methods and Materials in Secondary Teaching (3)**

Principles of education and human sciences as related to curricular materials and classroom situations. Sectioned by academic major: business, English, mathematics, modern language, science, social studies. (Lec. 3) Pre: 102, 312, PSY 232, senior standing, and permission of instructor. Concurrent enrollment in 250 required. Open only to secondary education majors. Spring semester only for students in the College of Business Administration. Not for graduate credit in education.

**431 Clinical Experiences for Secondary Education (1)**

Secondary school clinical experience, taken concurrently with secondary methods course (430) during semester prior to student teaching. Student applies content learned in methods course and prior course work to peer teaching and classroom settings. Restricted to majors. (Practicum) Not for graduate credit. S/U only.

**435 The Teaching of Composition**

See Writing 435.

**448 Literacy Practices for Content Subjects (3)**

Emphasis on the development of specialized vocabulary, textbook reading techniques, and other study skills needed to read math, science, social studies, business, and other content area materials. (Lec. 3) Pre: 312, 512 or graduate standing.

**449 Teaching Adolescent Literature (3)**

The current canon of adolescent literature will be reviewed and expanded, and methodologies for literature instruction will be explored. (Lec. 3) Pre: acceptance into the English education program or permission of instructor. Not open to students who have taken LSC 531.

**452 Evaluation of Elementary and Middle School Students (3)**

Purposes and means of evaluating elementary and middle school children will be critically analyzed. Types of tests and measurement tools will be examined, such as observation checklists, sociograms, rating scales, and portfolios. (Seminar) Pre: 453, 454, and acceptance into the elementary education program. Not for graduate credit.

**453 Individual Differences (3)**

Analyzing the needs of various student populations with attention given to the concomitant values, resources, and curriculum modifications necessary for success in learning. (Lec. 3) Pre: acceptance in the elementary education program. Not for graduate credit.

**454 Individual Differences Field Component (1)**

Supervised field experience related to 453 consisting of special education, language minority, compensatory education, gifted and talented, and at-risk students. (Practicum) Pre: acceptance in the elementary education program. Not for graduate credit.

**455 Language Arts Methods in Elementary and Middle School Teaching (2)**

Language arts and reading principles and practices of guiding children in the skillful use of basic means of communication (speaking, listening, writing, and reading) in the elementary and middle school classroom. (Lec. 2) Pre: 452, 456, 457, acceptance into the elementary education program, and concurrent enrollment in 458 and 459. Not for graduate credit.

**456 Mathematics Methods in Elementary and Middle School Teaching (2)**

Principles and practices of developing knowledge and skills in mathematics with elementary and middle school children. Service learning. (Lec. 2) Pre: 453, 454; acceptance into the elementary education program. Concurrent enrollment in 452 and 457. Not for graduate credit.

**457 Science Methods in Elementary and Middle School Teaching (2)**

Principles and practices of developing knowledge and skills in science with elementary school children. (Lec. 2) Pre: 453, 454, acceptance into the elementary education program or permission of director, and concurrent enrollment in 452 and 456. Not for graduate credit.

**458 Social Studies Methods in Elementary and Middle School Teaching (2)**

Principles and practices of developing knowledge and skills in social studies with elementary and middle school children. (Lec. 2) Pre: 452, 456, 457, acceptance into the elementary education program, and concurrent enrollment in 452 and 459. Not for graduate credit.

**459 Supervised Elementary Methods Practicum I (1)**

Supervised field experience related to evaluation of elementary students and methods courses: assessment, mathematics, and science. Students will observe and teach. (Practicum) Pre: admission into the elementary education program; 102, 250, 312, and 424; and concurrent enrollment in 425, 452, 456, and 457. Not for graduate credit.

**460 Supervised Elementary Methods Practicum II (2)**

Supervised field experience related to evaluation of elementary students and methods courses: teaching special needs students, social studies, and language arts. Students will observe and teach. Students meet periodically throughout the semester to focus on issues of classroom management. (Practicum) Pre: admission into the elementary education program; 102, 250, 312, and 424; and concurrent enrollment in 402, 455, and 458. Not for graduate credit.

**470 Advanced Methods in Elementary Mathematics (3)**

Advanced study of elementary mathematics topics and methods. Math activities that promote understanding in the elementary student in areas such as geometry, number theory, and probability/statistics. Emphasizes utilization of NCTM Mathematics Standards. (Lec. 3) Pre: 484 or permission of instructor.

**478, 479 Problems in Education (0-3 each)**

Advanced work in education conducted as seminars, supervised individual projects, or supervised field experiences. (Independent Study) Students in seminars and supervised individual projects will be graded using standard grades (A-F); students in supervised field experiences will be graded using S/U only.

**484 Supervised Student Teaching**

Under approved critic teachers, students participate in classroom teaching and other school activities for a period determined by credit to be earned. Areas include secondary education, middle level education, elementary education, early childhood education, and music. (Practicum) Pre: methods course(s) of department involved. Not for graduate credit in education. S/U credit except for music.

**485 Seminar in Teaching (3)**

Seminar associated with student teaching. Classroom issues, resource materials, and teaching models are addressed. Course work from throughout the undergraduate program and student teaching is integrated into a professional portfolio. Capstone. Areas include secondary nonvocational, elementary early childhood education, home economics, resource development, business, music, physical education (S/U only), theatre. (Seminar) Pre: concurrent enrollment in 484 and permission of director. Not for graduate credit in education.

**486 Student Teaching in Elementary Physical Education (6)**

Under selected and approved critic teachers, students participate in classroom teaching and other school activities. (Practicum) Pre: methods courses of department. Not for graduate credit in education.

**487 Student Teaching in Secondary Physical Education (6)**

See 486.

**488 Student Teaching in Special Physical Education (6)**

See 486.

**489 Student Teaching in Health Education (6)**

See 486.

**500 Foundations of Adult Education (3)**

Examination of fundamental structure, functions, problems, and history of adult education in America. Focus on socioeconomic factors and philosophical commitments that have shaped various programs. (Lec. 3) Pre: graduate or senior standing and permission of instructor.

**502 Foundations of Curriculum (3)**

History and analysis of foundational ideas and schools of thought about curriculum and how they shape modern practices in curriculum development, implementation, evaluation, and change in the United States. (Lec. 3)

**503 Education in Contemporary Society (3)**

Leading educators' responses to issues and challenges confronting American education. Emphasis on identification and analysis of contemporary theories and practices reflecting the relationship between characteristics of society and educational values. (Lec. 3)

**504 Adult Basic Education (3)**

Teaching of adults whose educational level is below high school completion. Physical, social, and psychological characteristics of disadvantaged adults and various techniques and materials useful in motivating and teaching them. (Lec. 3) Pre: permission of instructor.

**505 Leadership Development in Adult Programs (3)**

Discussion of leadership concepts, styles, and implications. Discussion and practice in the use of several adult education methods and techniques for increasing the effectiveness of groups and organizations. (Lec. 3) Pre: permission of instructor.

**506 Foundations of Education: Teaching and Learning (7)**

Philosophical, cultural, and psychological foundations of American education. Focus on ideological beliefs, cultural factors, and psychological principles and practices that shape teaching and learning. Field work integrated with classroom assignments. Pre: permission of director.

**508 Interdisciplinary Curriculum Development (3)**

Curriculum development of interdisciplinary units for schools. Focus is on grade-level units, which incorporate multiple subject areas. Both individual and group projects required. (Lec. 3) Pre: permission of instructor.

**512 Educational Psychology/Classroom Learning (3)**

Survey and analysis of classroom learning literature. Particular attention paid to interaction of theory and research for instructional practice. Introduces relevant measurement, statistical, and research concepts. (Seminar) Pre: previous course in psychology, or permission of instructor.

**514 Current Trends in Elementary Education (3)**

For teachers and administrators, the most effective use of instructional materials, media of communication, and personnel in elementary school. (Lec. 3) Pre: 529 or permission of director. In alternate years. Next offered 2007-08.

**515 Job-Embedded Professional Development (3)**

Job-embedded professional development focuses on assisting educators in the reflection and data analyses required to design and implement professional development activities within schools. The central purpose of these professional development activities is to improve teaching and student learning. The literature on job-embedded professional development will be analyzed, and participants will design proposals for job-embedded professional development in their schools/districts.

**516 Teaching English as a Second Language to Adults (3)**

Methods and materials for educators who teach English as a second language to adults. (Lec. 3) Pre: permission of instructor.

**517 Teaching Social Studies in the Elementary School (3)**

Intensive research in various cross-subject topics within the social studies. Systematic analyses of learning theories and methods as they relate to the teaching of social studies in the elementary grades. (Lec. 3) Pre: graduate or postgraduate standing.

**518 Teaching Science in the Elementary School (3)**

Emphasis on methods and materials for use in the teaching of science in technology, life, earth, space, and physical science topics. (Lec. 3) Pre: permission of instructor.

**520 Teaching of Mathematics (3)**

For the experienced teacher, examination of the principles underlying the teaching of mathematics in the elementary school; comprehensive survey of materials and methods available for the classroom teacher of mathematics. (Lec. 3) Pre: senior or graduate standing. In alternate years. Next offered 2007-08.

**521 Teaching Basic Reading to Adults (3)**

Techniques for teaching basic reading skills to illiterate adults; diagnosis, methods, and materials. (Lec. 3) Pre: 504 or permission of instructor.

**522 Technology Applications in Education and Training (3)**

Introduction to the use of microcomputers in pre-K through adult education settings. Current use and techniques will be explored for evaluating hardware and software, implementation issues, and future developments. (Lec. 3) Pre: senior or graduate standing.

**527 (or PSY 527) Language Study for Teachers of Reading (3)**

Focuses on the structure of language at the sound, syllable, and word level. Applies concepts to reading and spelling development, teaching phoneme awareness, interpreting student errors, and planning instruction. (Seminar)

**528 Teaching Language Arts (3)**

Preparation, presentation, use, and evaluation of methods and materials for teaching reading, writing, speaking, and listening in the language arts classroom and throughout the curriculum for K-6 grades. Pre: graduate standing.

**529 Foundations of Educational Research (3)**

Analysis of the current major research approaches to educational problems with emphasis on interpreting published research involving the language of statistics. Functional skills in basic descriptive statistics needed prior to enrolling. (Lec. 3)

**530 Qualitative Research and Evaluation (3)**

Qualitative methods, including ethnography, for obtaining and using data in describing, interpreting, and reaching warranted judgments, particularly about educational and social problems. Emphasis on developing individual projects and writing formal reports. (Lec. 3)

**539 Evaluation and Monitoring of Education Programs (3)**

Evaluation and monitoring theory and practice for education and training programs. Focus on development of evaluations for programs in job training, public education, and private sector programs. (Lec. 3) Pre: 529 or permission of instructor.

**540 Learning Disabilities: Assessment and Intervention**

See Psychology 540.

**544 Reading Acquisition and Reading Disability: Research and Implications for Practice**

See Psychology 544.

**555 Quantitative Thinking and Applications for Education (3)**

Basic logic and techniques of quantitative data analysis. For education Ph.D. students planning to conduct applied research in educational settings, this course provides foundations of receptive and expres-

sive literacy. This course satisfies the prerequisite for EDP 625, but cannot be used for program credit. (Lec. 3) Pre: admission to joint URI-RIC Ph.D. in education program. (Spans both summer sessions.)

**560 Advanced Foreign Language Teaching Methods (3)**

Focuses on standards-based instruction in world language classrooms and teachers' decision-making processes. Designed to help language teachers update teaching practices based on current second-language acquisition research. For already certified teachers. (Lec. 3) Pre: teaching certification.

**562 Methods of Intervention for Literacy Difficulties (3)**

Teachers will explore methods and materials used for developing phonological awareness, sound/symbol knowledge, word reading skills, fluency, comprehension, and vocabulary through readings, discussions, application, and reflection. (Lec. 3) Pre: restricted to students accepted to teacher education, or graduate standing, or permission of instructor.

**563 Teaching Reading to Multicultural Populations (3)**

Identification of the strengths of learners whose cultural and socioeconomic backgrounds vary, and the implications for teaching reading. Special emphasis on the selection and development of appropriate materials and teaching strategies. (Lec. 3) Pre: 424 or permission of instructor.

**564 Diagnosis of Literacy Difficulties (4)**

Use informal and formal techniques to assess students' reading and writing skills, evaluate contextual factors, and evaluate the match between learner and context. Culminates in case report and plan for instruction. (Lec./Lab. 4) Pre: admission to reading master's program or permission of reading program.

**565 Advanced Literacy Research Seminar (3)**

In-depth review of literacy research and theory from a variety of perspectives. Analysis of the relationships among research, theory, and political/instructional decisions. Includes development of a proposal to conduct literacy research. (Lec. 3) Pre: acceptance into reading master's program or permission of reading program.

**566 Intervention in Reading and Writing Difficulties (3)**

Supervised clinical experience in reading and writing difficulties. Students work directly with struggling readers and writers to diagnose reading/writing difficulties and plan and implement an appropriate program of instruction. (Practicum) Pre: 564 and 565.

**567 Field Study in Literacy (3)**

Supervised clinical experience in reading and writing difficulties. Students work directly with struggling readers and writers to diagnose reading/writing

difficulties and plan and implement an appropriate program of instruction. (Practicum) Pre: 565.

**568 Differentiation of Instruction (3)**

Strategies for differentiating instruction to meet diverse student needs in a heterogeneous classroom are addressed. Development of lessons using integrated differentiated instruction and assessment strategies is required. (Lec. 3) Pre: 400 or 424 or 448 or 569 or permission of instructor.

**569 Best Practices in the Middle Level Classroom (3)**

Examination of state and school improvement data at the middle level to improve curriculum, instruction, and assessment practices. Action research is performed with an emphasis on designs, processes, and models. (Lec. 3) Pre: graduate standing or permission of instructor.

**570 Elementary School Curriculum (3)**

Modern curriculum in the elementary school with emphasis on the needs of children. Covers language arts, social studies, science, arithmetic, and special subjects. (Lec. 3) Pre: 529 or equivalent. In alternate years. Next offered 2007-08.

**574 Current Trends in Secondary Education (3)**

Effective use of instructional materials, media of communication, and organization of personnel and current research. (Lec. 3) Pre: 529 or permission of director.

**575 Supervised Field Study/Practicum and Seminar in Education (3)**

For nonthesis candidates. Lectures, seminars, and field work. Candidates plan and conduct a field study/practicum project approved by the instructor and the student's professor. A formal proposal is developed, submitted, and approved, the project completed, and a formal paper defended. (Practicum) Pre: admission to a master's program in education and permission of instructor. May be repeated for a maximum of 6 credits.

**579 Labor Relations and Collective Bargaining in Education**

See Labor and Industrial Relations 579.

**581 Administering Adult Programs (3)**

Administration, personnel management, resource management, recruitment, development, and supervision within programs dealing with adults as learners. (Lec. 3) Pre: 505 or permission of instructor.

**582 Instructional Systems Development for Adult Programs (3)**

Designing and implementing instructional systems. Discussion of the basic tenets underlying theories of instructional technology, curriculum development, and curriculum change as they apply to adult learners in a variety of settings. (Lec. 3) Pre: 581 or permission of instructor.

**583 Planning, Design, and Development of Adult Learning Systems (3)**

Overview of the program planning process including goal setting, needs analysis, program planning, and implementing change strategies. Discussion of effective functioning in the role of change agent within an organization. (Lec. 3) Pre: permission of instructor.

**584 The Adult and the Learning Process (3)**

Examination of the adult as a learner with emphasis on the factors that affect adult learning and learning processes related to instruction. (Lec. 3) Pre: 581 or permission of instructor.

**586, 587 Problems in Education (0-3 each)**

Advanced work for graduate students in education. Courses conducted as seminars or as supervised individual projects. (Independent Study) Pre: permission of director. May be repeated for credit with different topic.

**594 Organization and Supervision of Literacy Programs (3)**

Field experience in the roles/responsibilities of a reading specialist. Requires shadowing reading professionals, visiting schools, involvement in professional groups, developing action plans, and developing and presenting professional development sessions. (Lec./Lab. 3) Pre: 565 or permission of reading program. In alternate years. Next offered 2007-08.

**596 Organization Development in Human Services and Education**

See Human Development and Family Studies 562.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**683 Psychology of the Exceptional Child**

See Psychology 683.

**687 Seminar: Topics in the Psychology of the Exceptional Individual**

See Psychology 687.

**920 Workshop for Teachers (1-3)**

Current issues in education. Specific topics offered for in-service teachers and administrators. May be repeated with different topic. (Workshop) Pre: teacher certification.

**921, 922, 923 Workshop for Teachers (1-3 each)**

Current issues in education. Specific topics offered for in-service teachers and administrators. (Workshop) Pre: certified teacher.

**Ph.D. in Education (EDP)**

*Co-Director: Professor Heifetz*

**610 Core Seminar I: Issues and Problems in Educational Inquiry and Foundations (3)**

Examination of issues and problems related to philosophical and historical aspects of educational thought and the role of society. Empirical analysis of classroom settings is emphasized. (Seminar) Pre: admission to the Ph.D. program in education.

**611 Core Seminar I: Issues and Problems in Educational Inquiry and Foundations (3)**

Examination of issues and problems related to philosophical and historical aspects of educational thought and the role of society. Empirical analysis of classroom setting is emphasized. (Seminar) Pre: 610.

**615 Research Methodologies (3)**

Four educational research methodologies (historical, qualitative, quantitative, and philosophical) are reviewed. Each methodology is examined for its contribution to knowledge and understanding of teaching and learning in an educational setting. (Lec. 3) Pre: concurrent enrollment in 611 or permission of instructor.

**620, 621 Core Seminar II: Issues and Problems in Human Development, Learning, and Teaching (3 each)**

Issues and problems related to human development, curriculum, teaching, and learning are examined. Ways of gathering and evaluating evidence about school and curriculum effectiveness are emphasized. (Seminar) Pre: (for 620) 610, 611, 615. Pre: (for 621) 620.

**625 Quantitative Analysis in Educational Research (3)**

Educational research data is quantitatively analyzed. Data collected during Core Seminar I are analyzed and interpreted. Applications of the general linear model to a variety of research designs and analytic strategies are emphasized. (Lec. 3) Pre: 610, 611, 615, and a course in introductory statistics, or permission of instructor.

**630, 631 Core Seminar III: Issues and Problems in Organizational Theory, Leadership, and Policy Analysis (3 each)**

Issues and problems related to applications of organizational theory, leadership theory, and policy analysis are studied. Core seminar examines cases related to district, state, and/or regional educational offices and agencies. (Seminar) Pre: (for 630) 620, 621.

**641 Field Research Seminar (1)**

Bi-weekly forums present first-, second-, and third-year students' evolving research questions and empirical designs. Discussion and feedback refine individuals' research plans, enhancing the methodological perspectives and tools of all participants. (Seminar) Pre: admission to joint (URI-RIC) Ph.D.

program in education. May be repeated up to a maximum of six semesters (a total of 6 credits).

**692, 693 Directed Readings and Research Problems (3-6 each)**

Directed readings and advanced research work under the supervision of a member of the graduate faculty, arranged to suit the individual requirements of the students. (Independent Study) May be repeated for a maximum of 12 credits. Pre: 610, 611, 615, 2 credits of 641, and permission of instructor.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U only.

**Electrical Engineering (ELE)**

*Chairperson: Professor Boudreaux-Bartels*

**201 Digital Circuit Design (3)**

Digital concepts. Combinational logic: gates, Boolean algebra, K-maps, standard implementations. Sequential circuits: flip-flops, timing diagrams, state diagrams, counters and registers, design methods. MSI devices, memory, and programmable devices. (Lec. 3) Pre: credit or concurrent enrollment in MTH 141.

**202 Digital Circuit Design Laboratory (1)**

Laboratory experience in digital electronics. Logic design projects using standard SSI and MSI integrated circuits. Multi-week design project. (Lab. 3) Pre: credit or concurrent enrollment in 201.

**205 Microprocessor Laboratory (3)**

Hands-on familiarization with computer and microprocessor software and hardware. Computer architecture and interfacing with input and output devices. (Lec. 2, Lab. 3) Pre: credit or concurrent enrollment in MTH 141.

**207 Introduction to Biomedical Engineering (3)**

Introduction to topics in biomedical engineering. Overview of human physiology, biomechanics, bioinstrumentation, rehabilitation engineering, assistive technologies, medical imaging, and bioelectricity. Ethical issues related to the impact of bioengineering on society. (Lec. 3) Pre: PHY 204 and MTH 142 and BIO 121.

**208 Introduction to Computing Systems (3)**

Bits, binary representations, digital logic structures, the von Neumann computing model, the machine and assembly language, interrupt and traps, input and output, subroutines, stack and high-level programming in computing systems. (Lec. 2, Lab. 3) Pre: credit or concurrent enrollment in MTH 141.

**212 Linear Circuit Theory (3)**

Kirchoff's Laws, DC-resistive networks, dependent sources, natural and forced response of first- and second-order circuits, sinusoidal steady-state response,

phasors, AC power. (Lec. 3) Pre: PHY 204 and credit or concurrent enrollment in MTH 244 or 362.

**215 Linear Circuits Laboratory (2)**

DC measurements, natural and step response of first- and second-order circuits, AC measurements, impulse and frequency response, operational amplifier circuits. (Lec. 1, Lab. 3) Pre: credit or concurrent enrollment in 212.

**220 Passive and Active Circuits (3)**

Electrical circuit laws and theorems, transient and steady-state response, phasors, frequency response, resonance. Diode and transistor circuits, digital logic devices. (Lec. 3) Pre: PHY 204 or 214. Not open to biomedical, computer, or electrical engineering majors.

**221 Electronic Instruments and Electromechanical Devices (3)**

Amplifiers, frequency response, feedback, field effect transistors, operational amplifier applications, electrical measurements. Magnetic circuits, transformers, electromechanical transducers and systems, DC and AC machines. (Lec. 3) Pre: 220. Not open to biomedical, computer, or electrical engineering majors.

**282 Biomedical Engineering Seminar I (1)**

Seminar series given by instructor, invited experts, and students with focus on biomedical electronics, medical devices, rehabilitation engineering, and microprocessor-based medical instrumentation. (Seminar) Pre: MTH 141 or permission of instructor.

**305 Introduction to Computer Architecture (3)**

Introduction to CPU, instruction set architecture, instruction pipeline, hazard avoidance, and branch prediction. Concept and evaluation of cache memory and memory management. Bus architecture and input and output interfaces. (Lec. 3) Pre: 201 and 212 and (205 or 208).

**306 Electronic Design Automation Laboratory (4)**

Digital design, simulation, synthesis, and verification using electronic design automation tools. IEEE VHDL hardware description language and rapid prototyping with FPGAs. Register transfer level design with reusable modules and cores. (Lec. 3, Lab. 3) Pre: 201 and 202.

**307 Bioelectricity (3)**

Quantitative analysis of electrical phenomena in biological cells, tissues, and organs. Action potentials and propagation in neurons, cardiac and skeletal muscle. (Lec. 3) Pre: (212 or 220) and (MTH 243 or 362).

**313 Linear Systems (3)**

Fourier series, Fourier transforms, transfer functions of continuous and discrete-time systems, transient and steady-state response, natural response and stability, convolution. (Lec. 3) Pre: 212 and MTH 362 and EGR 106.

**314 Linear Systems and Signals (3)**

Continuous-time and discrete-time systems, frequency response, stability criteria, Laplace transforms, z-transforms, filters, sampling, feedback, and applications. (Lec. 3) Pre: 313.

**322 Electromagnetic Fields I (3)**

Electrostatics and magnetostatics, forces on charged particles. Analysis employs vector algebra and vector calculus in orthogonal coordinates. Simple applications to engineering problems. (Lec. 3) Pre: 212 and MTH 243 and PHY 204.

**325 Electrical Power Distribution Systems (3)**

Theory of 3-phase power systems, introduction to per unit system of analysis, distribution system components (transformers, lines, switch-gear, loads), system layout, analysis of unbalanced systems with symmetrical components. (Lec. 3) Pre: 212 and PHY 204 and MTH 362.

**331 Introduction to Solid State Devices (3)**

Electrical and optical properties of semiconductors. Characteristics of p-n and metal-semiconductor junctions. Application to diodes, transistors and light emitting and absorbing devices. Fabrication technology is introduced. (Lec. 3) Pre: 212 and MTH 243 and (PHY 306 or 341).

**342 Electronics I (4)**

Review of linear circuit theory, operational amplifiers, diode and transistor circuits, computer-aided design, linear and nonlinear circuit applications, CMOS logic. (Lec. 3, Lab. 3) Pre: 201 and 212 and 215 and EGR 106.

**343 Electronics II (4)**

Bipolar and MOS transistor biasing, small signal amplifiers, amplifier frequency response, operational amplifiers, SPICE, nonlinear circuits, statistical circuit simulation. (Lec. 3, Lab. 3) Pre: 342.

**382 Biomedical Engineering Seminar II (1)**

Seminar series given by instructor, invited experts, and students with focus on physiological system modeling, biomechanics, biomaterials, tissue engineering, artificial organs, and biosensors. (Seminar) Pre: (201 and 212 and MTH 362) or permission of instructor.

**391, 392, 393 Special Problems (1-3)**

Independent study of special engineering problems. Topic and number of credits determined in consultation with the instructor. Pre: permission of instructor. 393 is for S/U credit.

**400 Introduction to Professional Practice (1)**

Engineering ethics. Discussions with faculty, visiting engineers, and invited speakers on ethical, social, economic, and safety considerations in engineering practice; career planning; graduate study. (Lec. 1) Pre: (205 or 208) and 212. Not for graduate credit.

**401 Lasers, Optical Fibers, and Communication Systems (4)**

Introduction to lasers, LEDs, optical fibers and detectors. Properties of Gaussian beams, optical resonators, and diffraction of Gaussian beams. Properties of Fabry-Perot cavities. Introduction to fiber optical communications systems. (Lec. 3, Lab. 3) Pre: ((205 or 208) and 313 and 322 and 331 and 342) or permission of instructor.

**405 Digital Computer Design (4)**

Hardware implementation of digital computers. Arithmetic circuits, memory types and uses, control logic, basic computer organization, microprogramming, input/output circuits, microcomputers. (Lec. 3, Lab. 3) Pre: (305 and 306) or permission of instructor.

**408 Computer Organization Laboratory (4)**

Engineering design problems involving hardware, software, and interface of computer and embedded systems. Students will apply skills and knowledge accumulated through the curriculum in a group senior design project. (Lec. 3, Lab. 3) Pre: (305 and 313 and 342) or permission of instructor.

**423 Electromagnetic Fields II (4)**

Transmission lines, Maxwell's equations, wave equation, reflection and refraction phenomena, polarization effects waveguides and antennas. Design project requiring application of electromagnetic theory and use of numerical methods. (Lec. 4) Pre: (313 and 322 and 342) or permission of instructor. Not for graduate credit.

**427 Electromechanical Systems Laboratory (4)**

State-variable models. Electromechanical devices and systems in translation and rotation. Design of sensors, actuators, and systems as used in control applications. (Lec. 3, Lab. 3) Pre: (313 and 322 and 331 and 342) or permission of instructor.

**432 Electrical Engineering Materials (4)**

Continuation of 331. Electronic and optical properties of materials, mainly semiconductors, applied to the performance and design of electronic devices. Measurements and analysis of these properties will be performed in the laboratory. (Lec. 4) Pre: (313 and 322 and 331 and 342) or permission of instructor.

**436 Communication Systems (4)**

Representation of signals and noise. Basic principles of modulation and demodulation. Waveform and digital transmission systems. Design of a component of a communication system. (Lec. 3, Lab. 3) Pre: ((215 or 342) and 314 and EGR 106) or permission of instructor.

**437 Computer Communications (3)**

Computer networks, layering standards, communication fundamentals, error detection and recovery, queuing theory, delay versus throughput trade-offs

in networks, multiple-access channels, design issues in wide and local area networks. (Lec. 3) Pre: ((205 or 208 or CSC 211) and (436 or MTH 451 or IME 411)) or permission of instructor

#### **438 (or CSC 418) Information and Network Security (4)**

Elementary cryptography, public key, private key, symmetric key, authentication protocols, firewalls, virtual private networks, transport layer security, and wireless network security. (Lec. 3, Project 3) Pre: 208 or MTH 362 or MTH 451 or IME 411 or junior or senior standing in computer engineering or computer science or permission of instructor.

#### **444 Advanced Electronic Design (4)**

Review of number systems, combinational and sequential logic, state machine. Design capture tools, hardware/software design, system implementation using PC's, MSI circuits, and FPGAs (Lec. 3, Lab. 3) Pre: ((205 or 208) and 313 and 342) or permission of instructor.

#### **447 Digital Integrated Circuit Design I (4)**

Introduction to full custom digital integrated circuit design. Analysis of logic functions and timing at the transistor level. Realization of logic functions via hand crafted transistor layout. Design project. (Lec. 3, Lab. 3) Pre: (202 and 342 and 313 and PHY 204) or permission of instructor.

#### **457 Feedback Control Systems (3)**

Fundamental techniques for the analysis and design of linear feedback systems. Stability, sensitivity, performance criteria, steady-state error, Nyquist criterion, root locus techniques, and compensation methods. (Lec. 3) Pre: ((205 or 208) and 314) or permission of instructor.

#### **458 Digital Controls Laboratory (4)**

Analysis and design of digital control systems using state-space techniques. State feedback and observers. Laboratory includes computer simulation and hardware implementation of control laws for electromechanical systems. (Lec. 3, Lab. 3) Pre: ((205 or 208) and 314 and 342) or permission of instructor.

#### **480 Capstone Design I (2)**

Application of engineering skills; teams focus on the design and communication of solutions to problems with real-world constraints (may include aspects of other engineering disciplines). First of a two-course sequence. Pre: (205 or 208) and 313 and 342 and permission of instructor. Not for graduate credit.

#### **481 Capstone Design II (2)**

Application of engineering skills; teams focus on the design and communication of solutions to problems with real-world constraints (may include aspects of other engineering disciplines). Second of a two-course sequence. Pre: (205 or 208) and 313 and 342 and permission of instructor. Not for graduate credit.

#### **482 Biomedical Engineering Seminar III (1)**

Seminar series given by instructor, invited experts, and students with focus on biomedical signals and systems, computers in medicine, technologies for health care, and biomedical ethics. (Seminar) Pre: ((205 or 208) and 313 and 342) or permission of instructor.

#### **489 Biomedical Engineering II (4)**

Medical instrumentation: patient safety, isolation and noise-rejection techniques, pacemaker, cardiac-assist devices. Physiological measurements: pressure, flow, biosensors. Biomedical signal processing: electrocardiography, electroencephalography. Medical instrumentation laboratories. Design project. Pre: permission of instructor. Not for graduate credit. Not open to students who have credit in 589.

#### **491, 492, 493 Special Problems (1-3)**

Independent study of special engineering problems. Topic and number of credits determined in consultation with the instructor. 493 is for S/U credit. Pre: permission of instructor. Not for graduate credit.

#### **501 Linear Transform Analysis (3)**

Transform analysis (including Fourier, Laplace, and z-transforms) of continuous- and discrete-time systems and signals. Properties of transforms, computational efficiency, and applications such as compact representations of video and sound. (Lec. 3) Pre: vectors, matrices, calculus with real and complex variables.

#### **502 Nonlinear Control Systems (3)**

Analysis of nonlinear systems: phase-plane analysis, Lyapunov theory, advanced stability theory, describing functions. Design of nonlinear control systems: feedback linearization, sliding control. (Lec. 3) Pre: 503 or permission of instructor.

#### **503 (or MCE 503) Linear Control Systems (4)**

State-variable description of continuous-time and discrete-time systems, matrices and linear spaces, controllability and observability, pole-placement methods, observer theory and state reconstruction, MATLAB exercises for simulation and design. (Lec. 4) Pre: 314 or MCE 366 or equivalent and MTH 215 or equivalent.

#### **504 (or MCE 504) Optimal Control Theory (3)**

Quadratic performance indices and optimal linear control, frequency response properties of optimal feedback regulators, state estimation, separation theorem, optimal control of nonlinear systems, Pontryagin's minimum principle. (Lec. 3) Pre: 503.

#### **506 Digital Signal Processing (4)**

Review of z-transform, frequency response of LTI systems, digital filter structures, sampling theorem, spectral analysis, DFT and FFT algorithms, windows, periodogram, introduction to design of FIR and IIR filters. (Lec. 4) Pre: 501 or permission of instructor.

#### **509 Introduction to Random Processes (4)**

Probability and random variables; random process characterizations and techniques. Useful models. Discrete and continuous systems with random inputs. Applications to detection and filtering problems. (Lec. 4) Pre: MTH 451 or equivalent and knowledge of calculus, linear systems, and transform methods.

#### **510 Communication Theory (4)**

Communication theory for discrete and continuous channels. Optimum-receiver principles and signal design. Fundamentals of information theory. Channel models, modulation techniques, source encoding, error control coding, decoding algorithms. (Lec. 4) Pre: 509.

#### **511 Engineering Electromagnetics (3)**

Review of electrostatics and magnetostatics. Maxwell's equations, wave propagation in dielectric and conducting media. Boundary phenomena. Radiation from simple structures. Relations between circuit and field theory. (Lec. 3)

#### **515 Systems Simulation**

See Industrial and Systems Engineering 525.

#### **525 Fiber Optic Communication Systems (3)**

Survey of important topics in optical communication devices and systems. The physical principles and operation of lasers, LEDs, fibers, and detectors are covered. (Lec. 3) Pre: 423, 331, 401 or equivalent.

#### **526 Fiber Optic Sensors (3)**

Theory and performance of different types of intensity-, phase-, and polarization-modulated fiber optic sensors (FOS) and their application areas. Properties of various active and passive devices used in building FOS. (Lec. 3) Pre: 401 or equivalent.

#### **527 Current Topics in Lightwave Technology (3)**

Current topics of importance in lightwave technology including coherent fiber optical communication systems, optical amplifiers, active and passive single-mode devices, infrared optical fibers. Material will be taken from recent literature. (Lec. 3) Pre: 525 or equivalent.

#### **531 Solid State Engineering I (3)**

Review of quantum mechanics, crystal properties, energy-band theory, introduction to scattering, generation-recombination processes, Boltzmann's transport equation, semiconductor junctions, devices. (Lec. 3) Pre: 331 or permission of instructor.

#### **532 Solid State Engineering II (3)**

Properties of insulators, semiconductors, conductors, and superconductors from quantum mechanical principles. Semiconductor physics and band theory of solids as applied to current semiconductor and optoelectronic devices. (Lec. 3) Pre: 531 or equivalent.

**533 Bipolar Devices (3)**

Device physics and computer modeling of bipolar junction devices, p-n junctions, metal semiconductor contacts, heterojunctions, bipolar junction transistors, BJT modeling, small signal equivalent circuits. (Lec. 3) Pre: 331 or permission of instructor.

**534 MOS Devices (3)**

Device physics and computer modeling of MOS devices, capacitors, metal semiconductor contacts, PMOS, NMOS, and DMOS transistors, short channel effects, modeling, small signal equivalent circuits. (Lec. 3) Pre: 331 or permission of instructor.

**535 BICMOS Integrated Circuit Design (4)**

Bipolar and MOS device models, process variations and circuit performance, temperature effects, current sources, opamps, oscillators, logic, memory circuits, A to D converters, switched capacitor circuits. Student designs are fabricated and tested. (Lec. 3, Lab. 2) Pre: 331 and 342.

**537 Digital Integrated Circuit Design II (4)**

Device physics for CMOS technology, design techniques for static and dynamic logic families and arithmetic elements, design capture tools, synthesis strategies, scaling and next generation CMOS technologies, design project. (Lec. 3, Lab. 3) Pre: 447 and 501.

**539 Analog Integrated Circuit Design (4)**

IC processing, device modeling and simulation, building blocks for analog circuits, amplifiers, continuous and discrete-time filters, band-gap references, Nyquist-rate converters, oversampled converters, design project. (Lec. 3, Lab. 3) Pre: 447 and 501.

**540 Theory of Integrated Circuit Testing (3)**

Introduction to product testing of digital, analog, and mixed-signal integrated circuits. Defect and fault modeling, test vector generation, design-for-testability, and IEEE 1149.X (boundary scan). (Lec. 3) Pre: graduate standing or permission of instructor.

**541 Semiconductor Test Engineering Instrumentation (4)**

Low level measurements, noise, analog integrated circuit design, testing case studies, automatic test equipment (ATE). Design and demonstrate a semiconductor production test using ATE. (Lec. 3, Lab. 3) Pre: graduate standing or permission of instructor.

**542 Fault-Tolerant Computing (3)**

Fault and error modeling, reliability modeling and evaluation, fault-tolerant computer systems, digital and mixed analog/digital VLSI testing, concurrent error detection, and design for VLSI yield enhancement. (Lec. 3) Pre: 405 or equivalent or permission of instructor.

**543 (or CSC 519) Computer Networks (4)**

Computer network architectures, data link control and access protocols for LANs, internet protocols and applications, software and hardware issues in

computer communication, delay analysis, and current research in computer networking. (Lec. 4) Pre: 437 or equivalent or CSC 412 or equivalent.

**544 Computer Arithmetic for VLSI (4)**

Hardware algorithms and implementation of fixed and floating-point adders, multipliers, and dividers. Error analysis and time/gauge complexity of arithmetic operations. Design simulation and evaluation with hardware description language. (Lec. 4) Pre: 405 or equivalent.

**545 Design of Digital Circuits (4)**

Design techniques for digital systems. Combinational circuits and synthesis and evaluation of finite-state machines. Test generation and design for testability for large digital systems. Hardware description language, exercises in the design and simulation of complex digital systems. (Lec. 4) Pre: 405 or equivalent.

**546 Design of Computer-Based Instrumentation (3)**

Design of memory systems, input-output techniques, direct memory access controllers, instrument buses, video displays, multi- and co-processors, real-time operations, device handler integration into high-level language and mass storage. (Lec. 2, Lab. 3) Pre: 408 or permission of instructor.

**547 Embedded Computer Systems and Applications (4)**

Principles of embedded computer system designs; CPU, memory, I/O, interfacing of embedded computers; modern hardware/software tools for embedded computing, and design of advanced systems including wired/wireless networking, image acquisition/processing, controls, medical equipment, or consumer electronics. (Lec. 3, Lab. 3)

**548 Computer Architecture (4)**

Classification and taxonomy of computer architectures. RISC vs. CISC. Cache and virtual memory systems. Pipeline and vector processors. Multi-processor and multi-computer systems. Interprocessor communication networks. Dataflow machines. Parallel processing languages. (Lec. 4) Pre: 405 or equivalent or permission of instructor.

**549 Computer System Modeling (4)**

Basic techniques used in computer system modeling, queuing theory, stochastic processes, Petri net, product form networks, approximation techniques, solution algorithms and complexity, computer simulation, performance studies of modern computer systems. (Lec. 4) Pre: 548 and 509 or MTH 451.

**550 Ocean Systems Engineering**

See Ocean Engineering 550.

**564 Medical Imaging (3)**

Engineering and clinical applications of medical imaging systems including X-ray, computed tomography, radioisotope imaging, ultrasound, magnetic

resonance imaging; picture archiving and communications system and medical image processing. Term paper required. May not be taken by students who have credit in BME 464 (Lec. 3) Pre: senior standing in electrical or computer engineering or permission of instructor.

**565 Medical Image Processing Laboratory (1)**

Development of medical image processing algorithms with graphical user interface in C++ under the Windows operating system: smoothing and sharpening filters, morphological filters, area measurement and edge tracer. Projects involving advanced algorithms. May not be taken by students who have credit in BME 465. (Lab. 3) Pre: senior standing in biomedical engineering or permission of instructor.

**571 Underwater Acoustics I**

See Ocean Engineering 571.

**575 (or MTH 575) Approximation Theory and Applications to Signal Processing (3)**

Interpolation; uniform approximation; least squares approximation; Hilbert space; the projection theorem; computation of best approximations; applications to the design of filters and beamformers, position location and tracking, signal parameter estimation. (Lec. 3) Pre: advanced calculus, elements of the theory of functions of a complex variable, and elements of linear algebra.

**577, 578 Seminar in Sensors and Surface Technology (1 each)**

Students, faculty, and invited outside speakers present and discuss selected topics related to research interests of the Sensors and Surface Technology Partnership. (Seminar) Pre: permission of instructor. May be repeated. S/U credit.

**581 Special Topics in Artificial Intelligence**

See Computer Science 581.

**583 (or CSC 583) Computer Vision (3)**

Algorithms used to extract information from two-dimensional images. Picture functions. Template matching. Region analysis. Contour following. Line and shape descriptions. Perspective transformations. Three-dimensional reconstruction. Image sensors. Interfacing. Applications. (Lec. 3) Pre: MTH 362 or equivalent.

**584 (or STA 584) Pattern Recognition (3)**

Random variables, vectors, transformations, hypothesis testing, and errors. Classifier design: linear, nonparametric, approximation procedures. Feature selection and extraction: dimensionality reduction, linear and nonlinear mappings, clustering, and unsupervised classification. (Lec. 3) Pre: 509 or introductory probability and statistics, and knowledge of computer programming.

**585 Digital Image Processing (3)**

Digital representation of images. Image improvement techniques: restoration models and spatial,

point, spectral, and geometric operators. Image analysis: morphological operators, edge detection, feature extraction, segmentation, and shape analysis. (Lec. 2, Lab. 2) Pre: 501 and 509.

#### 589 Biomedical Engineering II (4)

Medical instrumentation: patient safety, isolation and noise-rejection techniques, pacemaker, cardiac-assist devices. Physiological measurements: pressure, flow; biosensors. Biomedical signal processing: electrocardiography and electroencephalography. Medical instrumentation laboratories. Design project. Pre: permission of instructor. May not be taken by students who have credit in 489.

#### 591, 592 Special Problems (1-3 each)

Advanced work under supervision of a faculty member arranged to suit individual requirements of student. (Independent Study) Pre: graduate standing. May be repeated for a maximum of 6 credits. 592: S/U credit.

#### 594 Special Topics in Electrical Engineering (1-3)

Intensive inquiry into a certain important field of current interest in electrical engineering. (Lec. 1-3) Pre: permission of instructor.

#### 599 Master's Thesis Research (1-9)

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

#### 601 Graduate Seminar (1)

Seminar discussions presented by faculty and outside speakers on topics of current research interest. (Seminar) May be repeated for a total of 2 credits. May be taken concurrently with 602. S/U credit.

#### 602 Graduate Seminar (1)

Student seminars including the presentation of research results and detailed literature surveys. May be repeated for a total of 2 credits. S/U credit.

#### 606 Digital Filter Synthesis (3)

Review of z-transforms and discrete-time systems, properties of digital-filter networks, design of finite and infinite-impulse-response filters, accuracy considerations for coefficients and data, hardware implementation, system examples. (Lec. 3) Pre: 506 or equivalent.

#### 610 Applications of Information Theory (3)

Information theoretic underpinnings and practical techniques for data compression, channel coding for error control, and encryption and cryptography for secure information transmission. (Lec. 3) Pre: 509 or permission of instructor.

#### 625 Guided Waves in Optical and IR Fibers (3)

Guided electromagnetic wave aspects of optical and IR fibers, novel approximation methods for solution of vectorial and scalar wave equations in optical fibers, theory of transparency and nonlinear optical interactions in solids as applied to design of optical fibers. (Lec. 3) Pre: 511 and 525.

#### 648 Advanced Topics in Computer Architectures (3)

Modern high-performance computer structures, parallel and distributed hardwares and softwares, instruction level parallelism, memory hierarchy, fault tolerant computing, and future generation computers. (Lec. 3) Pre: 548.

#### 658 Instruction Level Parallelism (4)

Advanced architectural methods for improving microprocessor performance. Branch effect reduction techniques based on both hardware and software. Reduced control dependencies, branch prediction, speculative execution, eager execution, disjoint eager execution. (Lec. 3) Pre: 548 or equivalent.

#### 661 Estimation Theory (3)

Extraction of information from discrete and continuous data, best linear estimation, recursive estimation, optimal linear filtering, smoothing and prediction, nonlinear state and parameter estimation, design and evaluation of practical estimators. (Lec. 3) Pre: 503 and 509.

#### 665 Modulation and Detection (3)

Advanced treatment of modulation and detection theory. Minimum mean-square error, maximum likelihood, and maximum posterior probability estimators. Applications to communications systems and to radar and sonar systems. (Lec. 3) Pre: 510.

#### 670 Advanced Topics in Signal Processing (3)

Seminar for advanced students. Selected topics of current research interest. Material will be drawn primarily from recent literature. (Lec. 3) Pre: 506 and 606.

#### 672 Underwater Acoustics II

See Ocean Engineering 672.

#### 677 (or OCE 677) Statistical Sonar Signal Processing (3)

Basic results in probability and statistics, signal processing, and underwater acoustics are applied to the design of detection, estimation, and tracking in active sonar, passive sonar, and underwater acoustic communication. (Lec. 3) Pre: MTH 451 or ELE 509, ELE 506, and ELE 571 (or OCE 571), or equivalents. ELE 510 is useful and closely related, but not required.

#### 691, 692 Special Problems (1-3 each)

Advanced work under supervision of a faculty member arranged to suit individual requirements of a student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 6 credits. S/U credit.

#### 694 Advanced Special Topics in Electrical Engineering (1-3)

Intensive inquiry into a certain important field of current interest in electrical engineering, requiring advanced sophistication of a 600-level course. (Lec. 1-3) Pre: permission of instructor.

#### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Engineering (EGR)

#### 091 Cooperative Education Internship:

##### Part-Time (0)

Educational work experience in a selected engineering field. Ten to 20 hours per week at the employer's facility. (Practicum) Pre: matriculating status with at least junior standing and 2.50 quality point average.

#### 092 Cooperative Education Internship:

##### Full-Time (0)

Educational work experience in a selected engineering field. Students will work full-time as determined by the employer. (Practicum) Pre: matriculating status with at least junior standing and 2.50 quality point average.

#### 105 Foundations of Engineering I (1)

Introduction to engineering. Problem solving. (Lec. 1)

#### 106 Foundations of Engineering II (2)

Engineering problem solving. (Lec. 1, Lab. 2) Pre: MTH 141 or concurrent registration in MTH 141.

#### 316 (or PHL 316) Engineering Ethics (3)

A broad introduction to moral theory and its application to engineering, professionalism, and moral responsibility as an engineer. An understanding of engineering in a societal context. (Lec. 3) Pre: sophomore standing. (L)

#### 411 (or GER 411) Advanced Technical German (3)

Seminar on advanced scientific and engineering topics in an international context. All reading, discussion, and associated writing is conducted in German. (Lec. 3) Pre: any 400-level course in German and senior standing in an approved engineering program. Not for graduate credit.

#### 412 (or SPA 412) Advanced Technical Spanish (3)

Seminar on advanced scientific and engineering topics in an international context. All reading, writing, and discussion will be conducted in Spanish. (Seminar) Pre: any 400-level course in Spanish and senior standing in an approved engineering program. Not for graduate credit.

## English (ENG)

Chairperson: Associate Professor Durand

#### 110 Introduction to Literature (3)

Analysis of literature through reading and discussion of a number of genres derived from a variety of literary cultures. (Lec. 3) Not available for English major credit. (A) or (L) [D]

**160 (or CLS 160) Literatures of the World (3)**  
Introduction to significant works of world literature. (Lec. 3) (A) or (L) [D]

**201 Principles of Literary Study (3)**  
Introduction to the study of literature through reading and discussion of major methodologies, analytical approaches, and perspectives in literary study. Restricted to English majors. (Lec. 3)

**202 Introduction to Literary Study (3)**  
Introduction to the study of literature and culture through written responses to and participation in a series of faculty presentations reflecting current critical and creative practices in the discipline. (Lec. 3)  
Pre: 201. Restricted to English majors.

**205 Creative Writing (3)**  
Writing and analysis of works written by class members and professional writers. 205A Poetry; 205B Fiction; 205C Nonfiction. In 205C, type of writing varies with instructor. (Lec. 3) 205A and 205B may be offered online.

**241, 242 U.S. Literature I, II (3 each)**  
241: Selections from U.S. literature, beginnings to the mid-19th century. 242: Selections from U.S. literature, mid-19th century to the present. 241 not required for 242. (Lec. 3) (A) [D]

**243 The Short Story (3)**  
Critical study of the short story from the early 19th century to the present (Lec. 3) (A) or (L) [D]

**247 (or AAF 247) Introduction to Literature of the African Diaspora (3)**  
Major themes, genres, and motifs of the literatures of Africa and the Americas. Focus on one or more of these regions. Study of black oral and written literatures with emphasis on cultural, historical, political, and socioeconomic contexts. (Lec. 3) (A) [D]

**248 (or AAF 248) African-American Literature from 1900 to the Present (3)**  
Twentieth-century African-American literature, with emphasis on major issues, movements, and trends, including the study of W.E.B. DuBois, the Harlem Renaissance, the civil rights movement, and the black arts movement. (Lec. 3) (A) [D]

**251, 252 British Literature I, II (3 each)**  
251: Selections from British literature, beginnings to 1798. 252: Selections from British literature, 1798 to the present. (Lec. 3) 251 not required for 252. (A) or (L) [D]

**260 Women and Literature (3)**  
Critical study of selected topics. (Lec. 3) (A) [D]

**262 Introduction to Literary Genres: Non-fiction (3)**  
Introduction to the study of various types of non-fiction prose. (Lec. 3) (A) [D]

**263 Introduction to Literary Genres: The Poem (3)**  
Introduction to the study of the poem. (Lec. 3) (A) [D] Professor Stein's section is Writing Intensive [WI].

**264 Introduction to Literary Genres: The Drama (3)**  
Introduction to the study of the drama. (Lec. 3) (A) [D]

**265 Introduction to Literary Genres: The Novel (3)**  
Introduction to the study of the novel. (Lec. 3) (A) [D]

**280 Introduction to Shakespeare (3)**  
Introduction to the major plays and poetry of Shakespeare. (Lec. 3) (A) or (L) [D]

**300 Literature into Film (3)**  
Analysis of themes, techniques, printed and film narratives. 300A Drama; 300B Narrative. (Lec. 3) (A) [D]

**302 Topics in Film Theory and Criticism (3)**  
Introduction to film theory and criticism. Emphasis on semiotics, auteur theory, psychoanalysis, genre studies, feminist theory, materialist critique, or cultural studies, with focus on range of popular, experimental, and documentary film traditions. May be repeated for credit when taken with different emphasis. (Lec. 3) May be taken once for General Education credit. (A) [D]

**303 Cinematic Auteurs (3)**  
Literary study of one or more major directors with a substantial body of work exhibiting recurrent themes and distinctive style (e.g. Hitchcock, Kubrick, Kurasawa). Emphasis will vary. May be repeated once with different director. (Lec. 3) May be taken once for General Education credit. (A) [D]

**304 Film Genres (3)**  
Literary study of the particular conventions and evolution of one or more film genres (e.g. romantic comedy, science fiction, western). Emphasis will vary. (Lec. 3) May be repeated once with a different genre. May be taken once for General Education credit. (A) [D]

**305 Advanced Creative Writing (3)**  
For students with talent and experience in creative writing and a good reading background in the genre(s) they wish to write in, whether short fiction, drama, or poetry. (Lec. 3) May be repeated.

**317 Contemporary Women Novelists of the Americas**  
See Women's Studies 317.

**330 The Structure of American English (3)**  
Introduction to the phonology, morphology, and syntax of American English. Emphasis on skills needed to understand the prescriptive rules of grammarians and the descriptive rules of critics and teachers. (Lec. 3) (S)

**332 The Evolution of the English Language (3)**  
History of English from a minor dialect of the North Sea to a major language of the Renaissance. Focus on the languages and cultures of Beowulf, Chaucer, and Shakespeare. (Lec. 3)

**335 Interdisciplinary Studies in Comparative Literature**  
See Comparative Literature Studies 335.

**336 The Language of Children's Literature (3)**  
Introduction to stylistic analysis using children's literature. Focus on sound patterns, word choice, and sentence structure to discuss appropriateness, interpretation, and evaluation. Emphasis on one writer or work. (Lec. 3)

**337 Varieties of American English (3)**  
Study of regional and social dialects of American English. Emphasis on variations in pronunciation and word choice and on New England varieties. Includes independent or group field projects. Course contains language that may be offensive to some students. (Lec. 3)

**338 Native American Literature (3)**  
Study of the literature of Native America. Considers early texts including mythology, legends, and traditions as well as contemporary works. (Lec. 3)

**339 Literary Nonfiction (3)**  
Intensive study in one or more forms of nonfiction narrative (memoir, nature meditation, medical narrative, extended journalistic account, true crime, science narrative, historical account). (Lec. 3) May be repeated once for a total of 6 credits when taken with different emphasis.

**347 Antebellum U.S. Literature and Culture (3)**  
Study of pre-Civil War poetry and prose (the period formerly known as the American Renaissance/American Romantic movement). Readings may include Emerson, Douglass, Hawthorne, Melville, Stowe, Fern, Whitman, and others. (Lec. 3)

**348 U.S. Literature and Culture from 1865 to 1914 (3)**  
Study of post-Civil War poetry and prose. Readings may include Chesnutt, Chopin, Crane, DuBois, James, Twain, Wharton, and others. (Lec. 3)

**350 Literary Theory and Criticism**  
See Comparative Literature Studies 350.

**351 History of Literary Theory and Criticism (3)**  
Intensive study of the problematization of representation in works selected from classical to contemporary thought. (Lec. 3)

**352 Black Images in Film**  
See African and African-American Studies 352.

**355 Literature and the Sciences (3)**  
Study of the representation of scientific themes in literature and/or the relationship between literature

and the sciences. (Lec. 3) Pre: junior or senior standing. Enrollment priority given to students majoring in the sciences. (A) or (L) [D]

### 356 Literature and the Law (3)

Study of the representation of legal themes in literature and/or the relationship between literature and the law. (Lec. 3) Pre: junior or senior standing. Enrollment priority given to students with career interests in law. (L) [D]

### 357 Literature and Medicine (3)

Study of the representation of medical themes in literature and/or the relationship between literature and medicine. (Lec. 3) Pre: junior or senior standing. Enrollment priority given to students with interest in medical careers. (A) [D]

### 358 Literature and Business (3)

Study of the representation of business themes in literature and/or the relationship between literature and business. (Lec. 3) Pre: junior or senior standing. Enrollment priority given to students majoring in business. (A) [D]

### 360 Africana Folk Life

See African and African American Studies 360.

### 362 (or AAF 362) African-American Literary

#### Genres (Other than Short Story and Novel) (3)

Study of drama and poetry in the continued oral and written heritage of Africa and America. Focus on Baraka, Bullins, Dunbar, Giovanni, Hughes, and Walker. (Lec. 3)

### 363 (or AAF 363) African-American Fiction (3)

Study of formal and thematic developments in the African-American novel and short story. Focus on Baldwin, Chesnutt, Ellison, Gaines, Hurston, Jacobs, Marshall, Morrison, Naylor, Reed, Walker, Wideman, Wilson, and Wright. (Lec. 3)

### 364 (or AAF 364) Contemporary African Literature (3)

Study of contemporary African literature by genre, region, or theme, with emphasis on literary traditions, issues, and socio-cultural contexts. (Lec. 3)

### 366 Greek and Roman Drama (3)

Survey of Greek and Roman drama with special emphasis on art and achievement of major dramatists: Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca. (Lec. 3)

### 367 The Epic (3)

Studies in epic literature from Homer to the modern period. Historical emphasis will vary with instructor. (Lec. 3)

### 368 The Bible (3)

Introduction to poetry and narrative in the Old Testament and the Apocrypha, primarily in the Authorized (King James) Version. (Lec. 3)

### 373 British Literature of the Renaissance (3)

Study of the works of major Renaissance writers such as Wyatt, Sidney, Daniel, Spenser, Marlowe, Hobbes, and others. (Lec. 3)

### 374 British Literature: 1660–1800 (3)

Study of major trends in late 17th- and 18th-century verse, prose, drama, and fiction by such writers as Dryden, Behn, Congreve, Pope, Swift, and Johnson. (Lec. 3)

### 375 British Literature of the 19th Century (3)

Poetry, drama, fiction, and nonfiction selected from Romantic and/or Victorian writers such as Blake, Wordsworth, Coleridge, the Shelleys, Byron, Keats, the Brownings, Eliot, the Brontes, Dickens, Pater, and Wilde. (Lec. 3)

### 378 Aspects of Postmodernism (3)

Introduction to major issues and theories of postmodern literature and culture. Emphases may include temporality, borders, cyberspace, theories of the image, and constructions of subjectivity. (Lec. 3)

### 379 Contemporary Literature (3)

Studies in contemporary literature with an emphasis on cultural and interdisciplinary issues. Movements and emphases may include multiculturalism, culture and technology, globalization, and politics of the body. (Lec. 3)

### 381 Topics in Medieval and Renaissance Literature (3)

Emphasis on cultural and interdisciplinary issues and the relationship between these periods and the contemporary one. (Lec. 3) May be repeated once with a different topic.

### 382 Medieval and Renaissance Authors (3)

Studies in works by one or two major medieval or Renaissance authors (excepting Shakespeare). Emphasis on work of Chaucer, Dante, Milton, or Spenser. (Lec. 3) May be repeated once, barring duplication of writers.

### 383 Modernist Literature, 1900–1945 (3)

Poetry, drama, fiction, and/or nonfiction prose with an emphasis on writers such as Eliot, Faulkner, Hurston, Joyce, Stevens, Yeats, Woolf, and Wright. (Lec. 3)

### 385 Women Writers (3)

Analysis of the poetry, drama, or fiction of women writers. Emphasis on 19th-century, 20th-century, or contemporary authors. Course may be repeated for credit when taken with different emphasis. (Lec. 3)

### 387 Foundational Texts in Modern Gay and Lesbian Culture (3)

Study of literary works that trace the origins and ongoing definitions of modern homo/heterosexual identities. Selections from writers such as Whitman, Wilde, Proust, Woolf, Lawrence, Gide, Mann, Cather, and Baldwin. (Lec. 3)

### 394, 395 Independent Study (1–3 each)

Extensive individual study and research, culminating in a substantial essay. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 6 credits.

### 396 Literature of the Sea: The Rumowicz Seminar (3)

Poetry and prose of the sea. Guest lecturers and field trips. (Lec. 3)

### 397 The Literary Landscape of Britain (3)

Taught in England, second summer session. Examines impact of English social and natural landscapes on, and their treatment in, selected literary works. (Lec. 3) Usually taught in conjunction with HIS 397.

### 399 Special Topics in Literature (3)

Specialized topics in the study of literature offered by specialists in the field. (Lec. 3)

### 446 Modern Drama (3)

Studies in major works by modern playwrights. (Lec. 3)

### 447 Modern Poetry (3)

Study of major contributions and movements in poetry from 1900 to the present. (Lec. 3)

### 448 Traditions of the Novel in the Americas (3)

Studies in the North, South, and/or Central American novel. (Lec. 3)

### 451 Advanced Topics in International Film Media

See Film Media 451.

### 469 The Modern Novel (3)

Studies in the novel from 1900 to the present. (Lec. 3)

### 472 Shakespeare (3)

Studies in Shakespeare's drama and poetry. (Lec. 3)

### 474 (or AAF 474) Literature of the African Diaspora (3)

Study of specific authors, literary movements, or comparative themes in the literatures of Africa and the Americas, with a focus on one or more of these regions. (Lec. 3) May be repeated once for a total of 6 credits, barring duplication of writers.

### 480 British Restoration and Enlightenment Authors (3)

Studies in works by one or two major Restoration and Enlightenment authors. (Lec. 3) May be repeated once for a total of 6 credits, barring duplication of writers.

### 482 American Enlightenment Authors (3)

Studies in works by one or two major Enlightenment authors. (Lec. 3) May be repeated once for a total of 6 credits, barring duplication of writers.

### 485 U.S. Authors (3)

Studies in works by one or two major United States authors. (Lec. 3) May be repeated once for a total of 6 credits barring duplication of writers.

**486 British Authors (3)**

Studies in works by one or two major British authors. (Lec. 3) May be repeated once for a total of 6 credits, barring duplication of writers.

**487 World Authors (3)**

Studies in works by one or two major world authors (excepting U.S. or British authors). (Lec. 3) May be repeated once for a total of 6 credits, barring duplication of writers.

**489 Literature and Empire (3)**

Studies of specific authors, literary movements, or comparative themes in texts reflecting the impact of colonization and imperialism. (Lec. 3) Pre: junior or senior standing.

**493, 494 Internship in English (3)**

Exploration of career goals and job opportunities. Participate in a variety of work situations, supervised by both faculty member and on-site personnel. 120 hours per 3 credits, weekly one-hour class meeting. (Practicum) Pre: 18 credits in English and permission of chairperson. May be taken for a total of 6 credits, only 3 of which may be used as credit toward the English major. Not for graduate credit. S/U only.

**499 Senior Seminar (3)**

Critically investigates selected topics pertinent to the field. (Seminar) Open only to junior and senior English majors. May be taken once. Not for graduate credit.

*All 500-level courses require graduate standing or permission of instructor. All courses except ENG 510 and 511 may be repeated once if emphasis changes.*

**501 Workshop in Creative Writing (3)**

Close supervision and discussion of creative writing, including poetry, nonfiction, short prose forms, scripts, and novels. (Lec. 3)

**510 Introduction to Professional Study I (1.5)**

Orientation to the major discourses, critical frameworks, and databases constituting graduate research in language and literary studies, including computer-assisted research methodologies. (Seminar). S/U only.

**511 Introduction to Professional Study II (1.5)**

Orientation to the major discourses, critical frameworks, and databases constituting graduate research in language and literary studies, including computer-assisted research methodologies. (Seminar). Pre: 510. S/U only.

**514 Studies in Critical Theories (3)**

Introduction to historical or contemporary studies in critical theory; e.g. modernity and postmodernity, aesthetics, politics, interpretative traditions, audiences. May explore semiotic, psychoanalytic, materialist, feminist, postcolonial, and cultural theories. (Lec. 3)

**535 Old English (3)**

Introduction to the language and literature. (Lec. 3)

**540 Studies in American Texts Before 1815 (3)**

Cultural texts and topics of the Western Hemisphere before 1815: literary and nonliterary writings and genres; exploration and captivity narrative; African transmissions; critical theory; culture, gender, race, and class. (Lec. 3)

**543 Studies in 19th-Century American Texts (3)**

Literary and nonliterary cultural texts, genres, and topics of the Western Hemisphere. May include media; oral, industrial, and popular cultures; critical theory and the analysis of discourses; issues of class, gender, and race. (Lec. 3)

**545 Studies in American Texts After 1900 (3)**

Modern, contemporary, and postmodern cultural texts, genres, and topics of the Western Hemisphere; e.g. literary and nonliterary writings, performance modes, media, theory, and cultural studies of race, genre, and class. (Lec. 3)

**550 Studies in British Texts Before 1700 (3)**

Literary and nonliterary cultural texts and genres of the medieval, Renaissance, and Restoration periods. May include oral and written forms; the roles of audience, gender, class, and other social relations. (Lec. 3)

**553 Studies in British Texts 1700-1832 (3)**

Literary and nonliterary cultural texts and genres during the Restoration, Augustan, Enlightenment, and Romantic periods; e.g., drama, media, rhetoric, theory, and discourse analysis of gender, class, race, and other social relations. (Lec. 3)

**555 Studies in 19th-Century British Texts (3)**

Literary and cultural texts and genres during the 19th century. May include drama and other performance modes; critical theory and the analysis of discourses; representations of class, gender, and race. (Lec. 3)

**557 Studies in British Texts After 1900 (3)**

Modern, contemporary, and postmodern cultural texts; e.g., literary and nonliterary writings, drama, colonial and European cultural relations, film, theory, and cultural studies of institutional life and other social relations. (Lec. 3)

**560 Studies in European Texts (3)**

Introduction to the study of European texts in translation. May include different historical periods; literary and nonliterary writings; theory; film; rhetoric; and issues of culture, gender, race, class, and sexuality. (Lec. 3)

**570 Studies in Postcolonial Texts (3)**

Investigation of similarities and differences between nonoccidental and occidental genres; traditions and practices of postcolonial oral, written, and visual cultural forms from Africa, Australia, New Zealand, the Americas, India, Ireland, and Scotland. (Lec. 3)

**590 Selected Topics (1-3)**

Selected topics in American and British literature and topics of special interest not covered by traditional department offerings. (Lec. 1-3)

**595 Master's Project (1-6)**

Number of credits to be determined each semester in consultation with the major professor or director of graduate studies. S/U only.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

*All 600-level (seminar) courses require graduate standing or permission of instructor. Courses include specialized topics, intensive readings, occasional lectures, and frequent presentation of ongoing research by students. A substantial research project is required. May be repeated once if emphasis changes.*

**601 Seminar in Creative Writing (3)**

Seminar for advanced students under supervision of a member arranged to suit individual project requirements of students. (Seminar)

**605 Seminar in Genres (3)**

In-depth study of a single or several genres and/or subgenres, such as epic, drama, or horror film. (Seminar)

**610 Seminar in Historical Periods (3)**

Selected topics of relevance for historical periods. Periods emphasized are medieval, 16th- and 17th-century British, 18th- and 19th-century British, North American, and postcolonial. (Seminar)

**615 Seminar in Authors (3)**

In-depth and critical study of selected works of one or two authors from any historical period, genre, or medium; theories and traditions of authorship; authorship and gender. (Seminar)

**620 Seminar in Culture and Discourse (3)**

Contrasting theoretical conceptions of culture, discursive practices, hegemony, the public and private spheres, and related concerns; may cross any historical formation or period. (Seminar)

**625 Seminar in Media (3)**

Critical and theoretical conceptions of one or more media across any historical formation or period. (Seminar)

**630 Seminar in Canons (3)**

Critical and theoretical conceptions of canons and canonicity, including emerging or revisionist canons. (Seminar)

**635 Seminar in Subjectivities (3)**

Critically investigates class, race, gender, sexuality, and/or other subject positions as they are constructed by literary or other media. Might emphasize reading and writing communities, form and ideology, or identity politics. (Seminar)

**650 Seminar in Critical Theory (3)**

In-depth study of one or several critical theories such as psychoanalytic, feminist, postcolonial, and cultural studies. (Seminar)

**660 Seminar in Special Topics (3)**

Topics of special interest not covered by other offerings. (Seminar)

**690 Independent Graduate Study (1-6)**

Number of credits is determined each semester in consultation with the major professor, director of graduate studies, and chairperson.

**691, 692 Independent Graduate Study (3 each)**

Advanced study of an approved topic under the supervision of a faculty member. (Independent Study)

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**999 Methods of Teaching Literature (0)**

Materials and various methods of teaching literature on the college level. Required of teaching assistants who will teach English department literature courses as part of their TA assignment. (Seminar) Pre: graduate standing.

**English Language Studies (ELS)**

*Director:* Luz Rodriguez

**112 Expository Writing in English (3)**

Equivalent to WRT 104 but restricted to students whose first language is not English. Varieties and strategies of expository writing for different audiences and situations. (Lec. 3) (ECw)

**122 Academic Writing in English (3)**

Practice in writing assignments for introductory and general education courses across the curriculum. Restricted to students whose first language is not English. (Lec. 3) (ECw)

**200 English Language Fellow Training Course (3)**

Introduction to cross-cultural issues, social and academic barriers facing U.S. newcomers, content-based second language learning, and the social and academic aspects of peer collaboration. A training course for proficient speakers of English who have been admitted to the English Language Fellows Project. (Lec. 3) Service learning. Pre: admission to the English Language Fellows Project.

**312 Oral English Skills for the Public Sphere (3)**

Focus on pronunciation, listening and speaking skills, and a variety of speaking projects. Special emphasis on speaking freely in academic and social situations. (Lec. 3)

**322 Oral English Skills for the Academic Sphere (3)**

Intensive focus on pronunciation, listening and speaking skills, and a variety of communicative projects. Develop oral presentation skills. (Lec. 3)

**512 Oral Communication Skills for International Teaching Assistants (3)**

Intensive focus on pronunciation, listening and speaking skills, and awareness of colloquial American speech. (Lec. 3) Pre: graduate standing and permission of instructor. May be repeated until oral proficiency requirement is met.

**612 Advanced Communication Skills for International Teaching Assistants (3)**

Focus on pronunciation, teaching skills, and cross-cultural differences in education. Priority given to international teaching assistants. (Lec. 3) Pre: graduate standing. May be repeated until oral proficiency requirement is met.

**Entomology (ENT)**

*Chairperson:* Professor Alm (Plant Sciences)

**286 Humans, Insects, and Disease**

See Biological Sciences 286.

**385 (or BIO 385) Introductory Entomology (3)**

Introduction to the diverse components of entomology, emphasizing basic principles of insect morphology, physiology, behavior, and ecology. Current topics in insect biodiversity and management strategies. (Lec. 3) Pre: BIO 101 and 102, or permission of instructor.

**386 (or BIO 386) Introductory Entomology Laboratory (1)**

Insect structure, function, and systematics with field studies in ecology, survey, and collection of beneficial and pest insects in their natural environment. (Lab. 3) Pre: 385 or concurrent enrollment in 385.

**387 Insects of Turf and Ornamentals (3)**

Biology, ecology, and management of insects affecting turfgrasses, trees, and ornamental plants. (Lab. 3) Pre: PLS 200 or permission of instructor.

**390 (or AVS 390) Wildlife and Human Disease (3)**

Introduction to the important diseases of humans carried by wildlife, including surveillance, epidemiology, transmission, public health impact, and prevention. Interdisciplinary approach with emphasis on problem solving using real-life examples. (Lec. 3) Pre: BIO 101; BIO 262 or ENT 385 or equivalent.

**411, 511 Pesticides and the Environment (3 each)**

Review of the historical issues regarding pesticides, regulation, how they work, and costs/benefits associated with their use. Pre: BIO 102, CHM 103, 105; PLS 200, or permission of instructor. 411: not for graduate credit.

**519 Insect Biological Control (3)**

Natural regulation of pest abundance. Theoretical issues and practical experience in the use of biological controls for managing insect and weed problems. (Lec. 2, Lab. 1) Pre: 385 or permission of instructor. In alternate years. Next offered spring 2008.

**520 Insect Morphology and Physiology (3)**

An introduction to the structure and function of the insects and related arthropods. (Lec. 2, Lab. 2) Pre: 385 or permission of instructor.

**529 Systems Science for Ecologists (3)**

Concepts and techniques for computer analysis and simulation of complex biological systems. (Lec. 3) Pre: MTH 141, BIO 262, or permission of instructor.

**544 Insect Ecology (2)**

Ecology of insects and other terrestrial arthropods at the physiological, individual, population, community, and ecosystem levels. Pre: permission of instructor. In alternate years. Next offered fall 2007.

**550 Insect Taxonomy and Systematics (3)**

External morphology of insects and taxonomy of major families. (Lec. 2, Lab. 2) Pre: 385. In alternate years. Next offered fall 2007.

**555 Insect Pest Management (3)**

Evaluation of past and present pest-control strategies in light of insect ecology. Development of pest-management systems emphasizing biological control, resistant plants, and ecosystem redesign. (Lec. 3) Pre: PLS 200 or ENT 385 or permission of instructor. In alternate years. Next offered spring 2009.

**561 Aquatic Entomology (3)**

Biology of insects in aquatic environments, including systematics, morphology, and ecology. Field trips emphasize relations between species and habitat and the role of insects in aquatic management programs. (Lec. 2, Lab. 3) Pre: 385 or permission of instructor. In alternate years. Next offered fall 2008.

**571 (or MIC 571) Insect Microbiology (3)**

A two-part investigation of insect-microbe associations, concentrating on the comparative pathobiology of microbial agents in the insect host and the transmission of disease organisms by the insect vectors. (Lec. 3) Pre: 385 and MIC 211, or permission of instructor. In alternate years. Next offered spring 2009.

**586 Medical and Veterinary Entomology**

See Biological Sciences 572.

**591, 592 Special Problems in Entomology (1-3 each)**

Advanced independent research projects supervised by members of the research and unrelated to thesis research. Projects developed to meet individual needs. (Independent Study) Pre: permission of instructor by override only.

## **Environmental Economics (EEC)**

*Chairperson:* Professor Anderson

### **101 (REN) Freshman Inquiry into Environmental and Natural Resource Economics (1)**

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the Department of Environmental and Natural Resource Economics. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

### **105 (REN) Introduction to Resource Economics (3)**

Application of microeconomic principles to selected resource problem areas. The market mechanism and its alternatives are examined as methods of resolving contemporary resource use problems. (Lec. 3) (S)

### **110 (REN) Multimedia Presentation of Environmental Issues (3)**

Research of pressing environmental issues and creation of multimedia presentations using computer technologies to combine slides, video, audio, and computer graphics. No technical knowledge or computer skills are necessary. (Lec. 2, Lab. 2)

### **205 (REN) Resource Management and Conservation (3)**

Introduction to economically efficient resource management, the development of management regimes that support a sustainable economy; valuation, property rights, market structure, dynamic resource management. (Lec. 3) Pre: 105.

### **310 (REN) Economics for Environmental Resource Management and Policy (3)**

Economic approaches to natural resource use and environmental policies. Exploring measures of the "economic value of environment." How scientists, managers, and markets can affect the environmental quality of life. (Lec. 3) Pre: 105 or ECN 201. (S)

### **325 (REN) Planning and Managing a Small Natural Resources Firm (3)**

Directed toward students with an interest in managing a small marine, agricultural, or other natural resources firm. (Lec. 3) Pre: 105 or ECN 100 or 201 or permission of instructor.

### **345 (REN) International Trade and the Environment (3)**

Analysis of the economic effects of natural resource and environmental management policies on international trade in natural resource products, and of international trade policies on worldwide resource use and environmental quality. (Lec. 3) Pre: 105 or ECN 201 or permission of instructor.

### **356 (REN) Tourism Economics (3)**

Application of economic principles and research methods to tourist and tourism industry behavior. Practical research methods for assessing economic, social, and environmental benefits and costs of tour-

ism development are examined. (Lec. 3) Pre: 105 or permission of instructor. (S)

### **410 (REN) Fish and Wildlife Economics (3)**

Institutional, biological, and economic factors affecting the use of fish and wildlife resources. Economic analysis is applied to problems of fish and wildlife management in both marine and terrestrial ecosystems. (Lec. 3) Pre: 310 or ECN 328 or 323 or permission of instructor.

### **415 (REN) Environmental Harms and Sanctions**

See Economics 415.

### **432 (REN) Environmental Economics and Policy (3)**

Economic analysis of policies that address environmental and natural resource problems. Topics include pollution-control policies, economic incentives, and the optimal use of renewable and nonrenewable natural resources. (Lec. 3) Pre: 105 or ECN 201.

### **435 (REN) Aquacultural Economics (3)**

Economics of international and domestic development of aquaculture, environmental and resource regulations on aquaculture, and management of and decision making in aquacultural enterprises. Analysis of public and private aquaculture production and marketing. (Lec. 3) Pre: 105 or ECN 201 or permission of instructor.

### **440 (REN) Benefit-Cost Analysis (3)**

Basic concepts in benefit-cost analysis. Measurement, comparison of benefits and costs over time, and criteria for evaluation of projects and public policies. Problems and case studies in evaluation of current natural resources issues. (Lec. 3) Pre: 105 or permission of instructor.

### **441 (REN) Markets, Trade, and Natural Resources (3)**

Analysis of the role of markets in the valuation, management, and distribution of natural resources (esp. fish); price analysis; international trade; channels of distribution; commodity futures and options markets; marketing information; regulations and controls; cooperative marketing. (Lec) Pre: 105 or ECN 201 or permission of instructor.

### **491, 492 (REN) Special Projects (1-3 each)**

Workshop for advanced students where individuals or small groups are assigned projects requiring the analysis of natural resource and allocation problems with particular emphasis on marine resources. (Independent Study) Pre: permission of chairperson.

### **501 (REN) Graduate Seminar in Natural Resource Economics (1)**

Presentation of research and discussion of current issues and methodologies in environmental and natural resource economics. (Seminar) Enrollment is required of all full-time graduate students in residence; exceptions made with permission from chairperson. No more than one credit may be taken for program credit. S/U credit.

### **502 (REN) Research Methodology in Environmental and Natural Resource Economics (3)**

Practice and methods of applied research in environmental and natural resource economics. Topics include philosophical foundations, research project design, reporting research results, and criticism of proposals and research papers. (Lec. 3) Pre: 528 and 576 or permission of instructor.

### **514 (REN) Economics of Marine Resources (3)**

Role of economics in management of estuarine and marine resources. Particular attention to resource valuation, environmental issues, and management of renewable and nonrenewable resources. (Lec. 3) Not for graduate credit in resource economics.

### **518 (REN) Mathematics for Economists (2 or 4)**

Introduction to mathematical methods in economics and business. Economic applications of constrained and unconstrained optimization, matrix algebra, primal and dual functions, eigen roots, with illustrations from economics, finance, and environmental and natural resource economics. (Lec. 2 or 4) Pre: ECN 328 and MTH 131 or equivalent or permission of instructor.

### **520 (REN) Production Economics (2)**

Production in natural resource economics. The formulation and estimation of production functions. Technological change in economic growth and its measures. New directions in production theory and applications. (Lec. 2) Pre: at least 2 credits of 518, or MTH 131.

### **522 (REN) Computer Intensive Methods in Resource Economics (3)**

Use of selected software packages to analyze topics and numerical problems in environmental and natural resource economics, including GAMS/MINOS, spreadsheets, Crystal Ball, Matlab, GIS, and SAS. (Lec. 2, Lab. 2) Pre: 518 or equivalent (may be taken concurrently).

### **524 (REN) Quantitative Techniques in Natural Resources Research**

See Natural Resources Science 520.

### **527 (REN) (or ECN 527) Macroeconomic Theory (3)**

Static and dynamic models of aggregate economic behavior developed and analyzed. (Lec. 3) Pre: ECN 327 and 375 or equivalent, or permission of instructor.

### **528 (REN) (or ECN 528) Microeconomic Theory (3)**

Analytic tools of optimization. Neoclassical price and production theory. Neoclassical theory of consumer and producer behavior, price and distribution, partial and general equilibrium, and welfare economics. (Lec. 3) Pre: ECN 328 and 375 or equivalent, or permission of instructor.

**529 (REN) Game Theory (3)**

Analysis of situations of conflict and cooperation, with economics and business applications. Introduction to cooperative and noncooperative games, including the extensive and strategic forms, Nash equilibrium, repeated games and bargaining. (Lec. 3) Pre: 528 or permission of instructor.

**532 (REN) Land Resource Economics**

See Community Planning 537.

**534 (REN) Economics of Natural Resources (4)**

Microeconomic theory applied to problems of natural resource allocation. The rationale for government intervention in the market's provision of natural resources and alternative techniques for optimally allocated natural resources are investigated. (Lec. 4) Pre: 528 or permission of instructor.

**535 (REN) Environmental Economics (3)**

Theory of externalities; incentive-based and regulatory policy instruments for addressing market failure; theory and methods for valuing natural resource and environmental services; other environmental topics. (Lec. 3) Pre: 528 or equivalent.

**540 (REN) Applied Resource Economics (3)**

Examines issues in agricultural and natural resource policy through applications of theoretical and empirical tools. Applications include pollution control, fisheries management, and water and agricultural policy. (Lec. 3) Pre: 528 or permission of instructor.

**542 (REN) Conservation Biology and Resource Economics**

See Natural Resources Science 532

**543 (REN) Economic Structure of the Fishing Industry (3)**

Analysis of fishing industries from the standpoint of activity and efficiency. Problems related to common property resources, government policy, labor, and legal and institutional factors. (Lec. 3) Pre: 514 or permission of instructor. In alternate years. Next offered fall 2008.

**570 (REN) Experimental Economics (3)**

Controlled laboratory experiments to study economic theories, institutions, and policies. Provides an overview of experiment design and nonparametric data analysis. Applications include game theory, markets, public goods, and uncertainty. (Lec. 3) Pre: 528 or permission of instructor.

**576 (REN) (or ECN 576 or STA 576) Econometrics (4)**

Application of statistics and mathematics to economic analysis. Implication of assumption required by statistical methods for testing economic hypotheses. Current econometric methods examined and discussed. (Lec. 3, Lab. 2) Pre: ECN 575 or equivalent, STA 308 or equivalent, or permission of instructor.

**591, 592 (REN) Special Projects (1-3 each)**

Advanced work under supervision arranged to suit the individual requirement of the student. (Independent Study) Pre: permission of chairperson.

**595 (REN) (or MAF 595, PSC 595, SOC 595) Problems of Modernization in Developing Nations (3)**

Selected regional problems in the environmental complex, agricultural systems, population dynamics, distribution systems, political integration, urbanization-industrialization, popular participation, integrated theories of modernization. (Lec. 3) Pre: permission of instructors.

**598 (REN) Master's Nonthesis Research (1-3)**

Credit for completion of major paper. (Independent Study) Pre: enrollment in nonthesis master's program in resource economics.

**599 (REN) Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**602 (REN) Research Methodology (1)**

Practice and methods of research in environmental and natural resource economics. Philosophical foundations, competing views on methodology, project design, execution and communication of results to different audiences. (Lec. 1) Pre: 528 and 576 and concurrent registration in 502. In alternate years. Next offered spring 2008. S/U credit.

**610 (REN) Advanced Studies (1-3)**

Advanced topics in resource economics. Mathematical models in resource management. (Independent Study) May be repeated with different topics.

**624 (REN) Dynamic Economic Models (3)**

Fundamentals of dynamic economic theory. Dynamic optimization techniques applied to environmental and natural resource economics. (Lec. 3) Pre: 528 or permission of instructor.

**628 (REN) (or ECN 628) Advanced Microeconomic Theory I (3)**

Neoclassical value and distribution theory. Theories of imperfect competition, general equilibrium theory, and dynamic analysis. (Lec. 3) Pre: 528 or permission of instructor. In alternate years. Next offered fall 2008.

**630 (REN) Advanced Microeconomic Theory II (3)**

Development and application of welfare theory to natural resource use. Welfare concepts such as consumer surplus, producer surplus, and marginal cost pricing in policy decisions for agriculture and natural resources. (Lec. 3) Pre: 628 or permission of instructor. In alternate years. Next offered spring 2009.

**634 (REN) Advanced Economics of Natural and Environmental Resources (4)**

Concepts of economic efficiency applied to natural resources with emphasis on intertemporal allocation of nonrenewable and renewable resources. Appli-

cation of welfare and institutional economics to resource management and development; analysis of optimum allocation among users. (Lec. 4) Pre: 534 and 624 or permission of instructor.

**635 (REN) Marine Resources Policy (3)**

Analysis of public policy problems relating to estuarine and marine resources, including natural resource damage assessment, environmental issues, coastal zone concerns, and other selected topics. (Lec. 3) Pre: 534. In alternate years. Next offered spring 2008.

**676 (REN) (or ECN 676) Advanced Econometrics (4)**

A course covering the tools necessary for professional research in resource economics. Reviews the general linear model, but emphasis is on simultaneous equation models. Assumes a knowledge of introductory econometrics, statistical theory, and matrix algebra. (Lec. 4) Pre: 576 or its equivalent.

**677 (REN) Econometric Applications in Resource Economics (3)**

Special topics in econometrics as applied to agriculture and natural resources. Topics include time series models, Bayesian analysis, and dichotomous dependent variables. (Lec. 3) Pre: 676. In alternate years. Next offered fall 2007.

**699 (REN) Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Environmental Sciences (EVS)**

*Chairperson:* Professor Paton (Natural Resources Science)

**101 Freshman Inquiry into the Environment and Life Sciences (1)**

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the College of the Environment and Life Sciences. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

**366 Communicating Environmental Research and Outreach (2)**

Value and techniques of communicating scientific research and outreach efforts. Focus on technical and communication skill development. Student must be engaged in a personal research or outreach experience. (Seminar) Pre: permission of instructor; by override only.

**482 Innovative Subsurface Remediation Technologies**

See Geosciences 482.

**484 Environmental Hydrogeology**

See Geosciences 484.

**582 Innovative Subsurface Remediation Technologies**  
See Geosciences 582.

**584 Environmental Hydrogeology**  
See Geosciences 584.

**597 Professional Internship in Environmental Science and Management (1-3)**  
Supervised work performed with an environmental agency, nongovernmental organization, or private firm as part of the requirements of the Master of Environmental Science and Management degree program. (Practicum) Pre: enrollment in MESM degree program.

**598 Professional Master's Research (3)**  
Independent investigation to satisfy the research requirement for the Master of Environmental Science and Management degree. Substantial paper required. (Independent Study) Pre: enrollment in MESM degree program.

**599 Master's Thesis Research**

To be taken by students in the Master of Science in environmental sciences degree program. Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**601 Environmental Sciences Seminar**

See Geosciences 601.

**610 Multidisciplinary Problem Solving in Coastal Ecosystems (3)**

Focus on integrated research/policy in estuarine, watershed, and fisheries research through case studies emphasizing the integration of policy and science in coastal management. Methodology will stress work in multidisciplinary teams framed in humanities perspectives. (Lec./Lab.) May be repeated for credit twice. Pre: permission of instructor.

**612 Leadership and Communication in Coastal Ecosystem and Management (1-3)**

Weeklong workshop for development of skills and/or knowledge in the areas of social equity, ethics, human values, communication, and leadership for application in bridging science and policy in coastal stewardship. Pre: 610. May be repeated for up to 5 credits. S/U credit only.

**614 White Papers in Integrated Coastal Science (6)**

Preparation of a written synthesis of environmental, economic, social, and ethical dimensions of current issues in coastal ecosystem management. Project completed in collaboration with a nonacademic partner institution. (Independent Study) Pre: 610, 612.

**616 Field Practicum in Coastal Science (6)**  
Science field practicum using array of investigative methods; insight into nature and scale, analytical and interpretive approaches applied to data; approaches to describe uncertainty; and ways research can inform policymakers. (Practicum)

**618 Internship in Coastal Management (6)**  
Supervised internship in an approved work setting to provide students with experience relevant to their career goals. Students work with advisors to secure internship positions and design learning contract. Pre: permission of instructor.

**699 Doctoral Dissertation Research**

To be taken by students in the Ph.D. in environmental sciences degree program. Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Film Media (FLM)**

*Director:* Professor Leo

**101 Introduction to Film Media (3)**

Introduction to techniques of film practice, film history, genres, analysis of film texts, and reading of film images in their aesthetic, cultural, and literary context. (Lec. 2, Lab. 2) (A) [D]

**203 Film Theory (3)**

An introductory survey of classical and contemporary approaches to film theory and criticism. (Lec. 3). (A) [D]

**204 History of Film I (3)**

A survey of world cinema from its invention in the 1890s to the early 1950s, examining the production, distribution, and exhibition of narrative, documentary, and experimental among other forms of film. (Lec. 2, Lab. 2). (A) [D]

**205 History of Film II (3)**

A survey of world cinema from the 1950s to the present time, examining the production, distribution, and exhibition of narrative, documentary, and experimental among other forms of film. (Lec. 2, Lab. 2). (A) [D]

**401 Field Experience in Film Media (1-6)**

Structured academic work in a business, industry, educational, or agency setting under the supervision of a faculty advisor. (Practicum) Pre: permission of faculty advisor.

**451 (or ENG 451 or CLS 451) Advanced Topics in International Film Media (4)**

Study of international film genres from one or more national, regional, or diasporic cultures and traditions. Emphases on theoretical, historiographic, and media research methods. (Lec. 3, Lab. 2) Pre: junior

standing or permission of the instructor. FLM 204 or 205 recommended. May be repeated for a maximum of 8 credits with change of emphases or topics.

**491 Directed Studies in Film Media (1-6)**

Directed study for students wanting to do advanced work in film media. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by faculty member and approval by program director. May be repeated for a total of 6 credits.

**495 Seminar in Film Media (3)**

An intensive, interdisciplinary capstone course; exploring writings and ideas about film across two or more fields of study; or examining cross-cultural themes and issues in world cinema. Topic to be announced. (Seminar) Pre: 101 and 203 or permission of instructor.

*Following are related courses in other departments eligible for both the film media major and minor.*

**African and African-American Studies**

352 Black Images in Film

**Art**

204 Digital Art and Design I

215 Video and Filmmaking I

304 Digital Art and Design II

316 Video and Filmmaking II

417 Video and Filmmaking III

**Art History**

374 Topics in Film

376 History of Animation

377 History of Experimental Film

**Communication Studies**

341 Documentary Film Pre-Production

342 Documentary Film Production

346 Social and Cultural Aspects of Media

414 Rhetoric of Sports in Film

445 Television Advertising

**English**

300 Literature into Film: Drama or Narrative

302 Topics in Film Theory and Criticism

303 Cinematic Auteurs

304 Film Genres

**French**

320 Studies in French Cinema

**History**

358 Recent America in Film

**Italian**

315 Italian Cinema

**Journalism**

110 Introduction to the Mass Media

230 Introduction to Radio and Television News

311 Media Criticism in America

331 Electronic News Gathering

**Spanish**

320 Studies in Spanish Cinema

**Theatre**

182 Script Analysis: Film Media

*In addition, special topics and temporary courses offered by other departments may be eligible for both the film media major and minor.*

## Forensic Science (FOS)

*Chairperson:* Professor Euler (Chemistry)

**392 Introduction to Criminalistics (3)**  
See Chemistry 392.

## French (FRN)

*Section Head:* Associate Professor Durand

### 101 Beginning French I (3)

Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior French is required. Will not count toward the language requirement if the student has studied French for more than one year within the last six years. (FC) [D]

### 102 Beginning French II (3)

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

### 103 Intermediate French I (3)

Development of facility in reading texts of moderate difficulty; supplemented by further work in grammar, conversation, and composition. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

### 104 Intermediate French II (3)

Continuation of 103. Students enrolling in this course should have taken 103 or equivalent. (Lec. 3) (FC) [D]

### 105 Basic Conversation (1)

Practice in basic French conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 103 or 104. May be repeated once for a maximum of 2 credits. (FC) [D]

### 201 French Pronunciation (1)

The sounds of French; relationship between spelling and pronunciation; regional variation. Practice in pronouncing French prose and poetry. (Lab. 2) Pre: 104 or equivalent or permission of instructor.

### 204 French Composition I (3)

Practice in writing French; topics selected from everyday events and readings in French; emphasis on vocabulary building; some grammar study, frequent compositions. Students enrolling in this course should have taken 104 or equivalent. (Lec. 3) (FC) [D]

### 207 French Oral Expression I (3)

Training in the spontaneous use of oral French. Students will extend the quantity and quality of spoken French that they are able to produce. Special

focus on narration or storytelling in French. (Lec. 3) Pre: 104 or equivalent or permission of instructor. (FC) [D]

### 303 The French in North America (3)

Surveys the background and current status of the French diaspora in North America, including Acadians, Quebecers, French Canadians, and French Americans, with special emphasis on the literary, artistic, and other contributions of these groups to the civilization(s) of the continent. Taught in French. (Lec. 3) Pre: 204 or 207 or permission of instructor.

### 304 French Composition II (3)

Writing of literary French. Frequent compositions and critiques with emphasis on the stylistic devices. Recommended for those concentrating in French. (Lec. 3) Pre: 204.

### 307 Oral Expression II (3)

Discussion, short speech making, pronunciation, everyday vocabulary, and improvement of conversation. Matters of current interest in French selected by instructor and students. (Lec. 3) Pre: 207.

### 309 French Culture and Literature to 1789 (3)

Survey of the significant developments in the arts, society, and literature in France from the Middle Ages to the French Revolution. (Lec. 3) Pre: 204 or permission of instructor. (A) (FC) [D]

### 310 Modern French Culture and Literature (3)

Survey of the significant developments in the arts, history, and literature in France from the French Revolution to the present. (Lec. 3) Pre: 204 or permission of instructor. (A) (FC) [D]

### 315, 316 French Internship Abroad (3)

Supervised work experience in a French-speaking country for advanced language students. (Practicum) Pre: 200-level French course or equivalent or permission of instructor. (A) (FC) [D]

### 318 French Across the Curriculum (1)

Reading and discussion of original French texts in conjunction with courses throughout the university curriculum. Designed to maintain and improve French language skills and to enrich study through exposure to texts in the original language. (Lec. 1) Pre: permission of instructor. May be repeated.

### 320 Studies in French Cinema (3)

Study of major French/Francophone film genres and of prominent French/Francophone directors. Emphasis will vary. (Lec. 3) Course taught in English. Students counting the course for a major or minor in French are required to do all written work in French and must have credit for FRN 204 and 207. Pre: 204 and 207 or permission of instructor. May be repeated with different topics for a maximum of 9 credits. (A) or (FC) [D]

### 391 Literature to 1789 in Translation (3)

Major developments in French literature from the Middle Ages through 1789. Reading in translation of selected literary works from representative authors. (Lec. 3) Not for major credit in French.

### 392 Nineteenth-Century Literature in Translation (3)

Reading in translation of selected literary works from representative 19th-century authors. (Lec. 3) Not for major credit in French.

### 393 Twentieth-Century Literature in Translation (3)

Reading in translation of selected literary works from representative 20th-century authors. (Lec. 3) Not for major credit in French.

### 402 French Phonetics (3)

Introduction to articulatory phonetics, phonetic notation, and phonetic transcription. Rudiments of recognizing and reproducing French intonation patterns. Laboratory in phonetics and intonation. (Lec. 3) Pre: 201 or permission of instructor.

### 408 The French Language: Past, Present, and Future (3)

Introduction to the history and present state of French. Study of standard and colloquial French, dialects, regional variations, language of youth and professions. Current tendencies; the Francophone movement. (Lec. 3) Pre: 304 or permission of instructor.

### 412 Topics in French Culture and Literature (3)

Topics in French literature and culture. (Lec. 3/Online) Pre: 309 or 310 or permission of instructor. May be taken more than once for credit on different topics.

### 473 French Canadian Literature (3)

Early historical and biographical works, but primarily the novel, poetry, and theatre of the 20th century. (Lec. 3) Pre: 309 or 310 or permission of instructor.

### 474 African Literature in French (3)

Authors of Africa and the diaspora; includes Camara, Cesaire, Dadié, Senghor. (Lec. 3) Pre: 309 or 310 or permission of instructor.

### 480 Business French (3)

Study of concepts and terminology relating to the French business world. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in at least one 300-level French language course.

### 497, 498 Directed Study (3 each)

For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of a project by a faculty member and approval of section head.

## Genetics

### Aquaculture and Fisheries Science

576 Seminar in Genetics of Aquatic Organisms

### Biochemistry

242 Human Genetics and Human Affairs

353 Genetics Laboratory

452 Advanced Topics in Genetics

### Biological Sciences

352 General Genetics

573 Developmental Genetics

579 Advanced Genetics Seminar

### Microbiology

502 Techniques of Molecular Biology

552 Microbial Genetics

561 Recent Advances in Molecular Cloning

### Plant Sciences

250 Plant Breeding and Genetics

471 Plant Improvement

## Geography (GEG)

*Chairperson:* Professor Green

### 101 World Geography (3)

An examination of major world regions. Basic geographic concepts are presented. Physiographic, political, economic, social, and cultural influences are addressed in a spatial context. (Lec. 3) (S) [D]

### 104 Political Geography (3)

Pattern of political units throughout the world; special emphasis on boundaries, newly independent nations, and other aspects of political control over territory. (Lec. 3) (S) [D]

### 200 The Geography of Human Ecosystems (3)

The evolution of human environments from the Stone Age to the contemporary megalopolis and the emergent world city in terms of human-earth-space-resource relationships. (Lec. 3)

### 202 Introductory Urban Geography: Understanding Cities

See Community Planning 202.

### 203 Economic Geography (3)

Surveys the geographic backgrounds of economic activities. Populations and the resources of agriculture, industry, and commerce in terms of their world and regional distribution. (Lec. 3)

### 350 (or MAF 350) Caribbean Geography (3)

Exploration of the physical, political, economic, and cultural environment of the Caribbean region, with emphasis on small island states from the colonial era to the present. (Lec. 3)

### 475 The Revolutionary City: Cuba

See Community Planning 475.

### 511 Geography for Life: Educational Strategies (3)

Knowledge of geography and its importance for effective citizenship. Classroom teachers integrate

geographic concepts for lesson plan development using National Geographic Standards and other source materials. (Lec. 3)

## Geosciences (GEO)

*Chairperson:* Associate Professor Veeger

### 100 Environmental Geology (3)

Geologic processes, how they affect people and vice versa; geologic hazards, earthquake impact, shoreline development, offshore oil, waste disposal, water, energy and other resources, climate change. (Lec. 3) (N)

### 101 Freshman Inquiry into the Geosciences (1)

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the Department of Geosciences. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

### 102 Evolution and Extinction of the Dinosaurs (3)

General introduction to the dinosaurs. Variety, habits, warm-bloodedness, and extinction discussed. Pterosaurs and bird origins presented. (Lec. 3) (N)

### 103 Understanding the Earth (4)

Processes operating within and upon the earth. Relationship of plate tectonics to volcanism, earthquakes, and mountain building. Development and modification of landscapes by rivers, glaciers, wind, waves, and ground water. Environmental implications of geologic processes. (Lec. 3, Lab. 2) (N)

### 110 The Ocean Planet

See Oceanography 110. (N)

### 120 Geology of U.S. National Parks (3)

Selected parks are used to illustrate geologic processes and age relationships to understand earth history. Includes plate tectonics, volcanic and plutonic activity, glaciation, cave formation, stream and coastal processes, landscape formation. (Lec. 3) (N)

### 204 Evolution of the Earth (4)

Survey of earth history. Time, plate movements, ancient environments, climates, and the fossil record introduced in historical context (Lec. 3, Lab. 2). Pre: 103, equivalent, or permission of instructor.

### 210 Landforms: Origin and Evolution (4)

Development, distribution, and geologic significance of landforms produced by rivers, glaciers, coastal processes, weathering, and other geomorphic agents. Interpretation of landforms through field studies, topographic maps, and aerial photographs. (Lec. 3, Lab. 2) Pre: 103 or permission of instructor.

### 250 Evolution

See Biological Sciences 250.

### 277 Coastal Geologic Environments (3)

Geologic processes in coastal environments such as barriers, lagoons, estuaries, bays, and rocky

headlands; impact of coastal geologic hazards such as hurricanes, winter storms, and sea-level rise. Response of people to hazards. Field trips, small-group project required. (Lec. 3) Pre: 103.

### 320 Earth Materials (4)

Hand-sample identification and characterization of minerals and rocks, including crystallography, composition, classification, origin, and relationship to geological occurrence; also includes aspects of soil-forming minerals, ore deposits, and other mineral resources. (Lec. 3, Lab. 2) Pre: 103, credit or concurrent enrollment in CHM 101 or 103.

### 370 Structure of the Earth (4)

Stress and strain relationships as they pertain to rocks. Manifestations of these phenomena in geologic structures and criteria for recognizing them. (Lec. 3, Lab. 2) Pre: PHY 213 and 285 or 111 and 185 or permission of instructor.

### 450 Introduction to Sedimentary Geology (4)

Principles underlying formation and composition of lithofacies and sedimentary environments. Methods, procedures, and techniques used to study sedimentary processes, depositional environments, sediment and rock sequences, and paleogeography. (Lec. 3, Lab. 2) Pre: graduate or advanced undergraduate standing in environmental, resource, or engineering major.

### 465 Introduction to Geophysics (3)

Physical properties of earth and the application of geophysical methods to explore the earth's interior for natural resources. Introductory interpretation of gravity, magnetic, seismic, and radiometric surveys. (Lec. 2, Lab. 2) Pre: 103, PHY 112, MTH 132.

### 468 Groundwater Chemistry (4)

Introduction to the chemical processes controlling water chemistry in low-temperature environments. Chemical weathering, ion exchange, redox, mineral equilibrium, isotopes, and chemical modeling of aqueous systems. (Lec. 3, Lab. 2) Pre: CHM 101, 102, 112, 114; GEO 103, 320. Offered in odd-numbered years. Next offered fall 2007.

### 480 Summer Field Camp (4-8)

Geologic field mapping and principles. (Practicum) Pre: 210, 320, 370, and 450 recommended. Course not offered through URI; prior approval of selected camp required by the Department of Geology. Recommended between junior and senior years. Not for graduate credit in geology.

### 482 (or NRS 482 or EVS 482) Innovative Sub-surface Remediation Technologies (4)

Innovative remediation technologies for treating contaminated groundwater and sediments: theory, applications, and limitations of selected methods. Discussion of case studies. (Lec. 4) Pre: permission of instructor. In alternate years. Not for graduate credit.

**483 Hydrogeology (4)**

Study and interpretation of groundwater flow systems and the interaction between groundwater and the geologic framework, including groundwater flow, aqueous geochemistry, groundwater resource evaluation, and groundwater in geologic processes. (Lec. 3, Lab. 2) Pre: 103, 210, and MTH 131 or 141, or permission of instructor.

**484 (or NRS 484 or EVS 484) Environmental Hydrogeology (4)**

Physico-chemical principles and fundamental relationships that describe the fate and transport of contaminants in the hydrologic system. (Lec. 3, Lab. 2) Pre: 483 or CVE 588 or NRS 510, or permission of instructor. Not for graduate credit. Offered every other year.

**485 (or CVE 485) Environmental Engineering Geophysics (3)**

Field and lab methods of determining physical rock constants such as density, porosity, permeability, electrical conductivity, and seismic velocity, with applications in geology and environmental engineering. (Lec. 2, Lab. 2) Pre: 103, MTH 132 or 142, PHY 111 and 185 or 213 and 285, and junior standing, or permission of instructor. In alternate years.

**491 Special Topics (1-3)**

Advanced work for undergraduates under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Not for graduate credit in geology.

**497 Field Experience in the Geological Sciences (4)**

Capstone field trip. (Lec. 2, Field Trip) Pre: 204, 320, 370, and 450. 3.00 GPA in major/2.50 GPA overall required, and permission of instructor. Extended field trip required. May be repeated for credit.

**499 Senior Thesis (3)**

Independent research. Student selects an area of study and works in close conjunction with a faculty member of his or her choice. (Independent Study) Pre: senior standing and permission of instructor. Not for graduate credit in geology.

**500 Graduate Seminar (1)**

Weekly seminar series featuring oral presentations of the results of ongoing, topical research. S/U credit.

**501 Vertebrate Paleontology (1-3)**

Advanced work in vertebrate paleontology under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**510 Glacial Sedimentation Research (1-3)**

Advanced research in glacial sedimentation under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**511 Quaternary Paleoclimates (1-3)**

Advanced work in Quaternary paleoclimates under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**515 Glacial Geology (3)**

Investigation of glacial environments and processes including areas with presently existing glaciers. Emphasis on the development of glacial landscapes and deposits. Field trips in New England area. (Lec. 2, Lab. 3) Pre: graduate or advanced undergraduate standing in environmental, resource, or engineering major.

**530 Petrogenetic Igneous Processes (4)**

Examination of key physico-chemical processes responsible for the diversity of igneous rocks and igneous activity. Emphasis on geochemistry, petrography, field relationships, and tectonic setting. (Lec. 3, Lab. 2) Pre: 321 or permission of instructor. In alternate years. Next offered spring 2009.

**531 Metamorphic Petrology (3)**

Facies concept and other methods of interpreting metamorphic mineral assemblages. Chemical and fabric changes during metamorphism, including principles of structural petrology. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor. In alternate years.

**532 Analytical Geochemistry (1-3)**

Advanced work in analytical geochemistry under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**533 Readings in Petrology (1-3)**

Seminar in petrology with readings drawn from the current professional literature. S/U credit.

**550 Sedimentary Processes and Environments (3)**

Physical processes of sedimentation with emphasis on river, shoreline, estuarine, and lagoon environments. Emphasis on field study including 9-day field trip. (Lec. 3) Pre: graduate or advanced undergraduate standing in environmental, resource, or engineering major.

**551 Coastal Sedimentation Research (1-3)**

Advanced research in coastal sedimentation under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**552 Readings in Sedimentation (1-3)**

Seminar in sedimentary geology with readings drawn from the current professional literature. S/U credit.

**555 Reconstructing Terrestrial Paleoenvironments (4)**

Sedimentological and paleontological methods used in the interpretation of the terrestrial sedimentary

record. (Lec. 3, Lab. 2) Pre: 450 or permission of instructor. Offered in spring of even-numbered years.

**565 Geophysical Models (3)**

Model interpretation of gravity, magnetic and geoelectric field surveys with geologic constraints. Conversion of quantitative geophysical models into geologic/hydrologic structures. (Lec. 2, Lab. 2) Pre: MTH 132, PHY 112 or equivalent. Offered in spring of odd-numbered years.

**568 Isotopes in Hydrogeology (3)**

Use of environmental isotopes in groundwater studies; dating groundwater, delineating flow paths and identifying recharge areas; geochemical evolution of groundwater and assessment of contamination. (Lec. 3) Pre: 483 and 468 or permission of instructor. Offered in even-numbered years.

**577 Coastal Geologic Hazards (3)**

Geologic hazards in the coastal zone and their impact on people. Includes waves, storm-surge, mass-wasting, and sea-level rise. Geologic effectiveness of engineering structures and management techniques. Emphasis on field study. (Lec. 2, Lab. 3) Pre: graduate or advanced undergraduate standing in environmental, resource, or engineering major.

**580 New England Geology (3)**

Review of the bedrock geology of New England, and its applications for the Appalachian/Caledonides mountain chain and theories of orogenesis. Mandatory field trips. (Lec. 3) Pre: 320, 370, or permission of instructor. Offered in fall of odd-numbered years.

**581 Topics in Tectonic Geology (3)**

Review of selected topics in continental and oceanic tectonics. (Seminar) Pre: permission of instructor. Offered in fall of even-numbered years.

**582 (or NRS 583, or EVS 582) Innovative Subsurface Remediation Technologies (4)**

Innovative remediation technologies for treating contaminated groundwater and sediments: theory, applications, and limitations of selected methods. Discussion of case studies. Offered alternate years. (Lec. 4) Pre: permission of instructor.

**583 Groundwater Modeling (3)**

Numerical modeling of groundwater flow and solute transport. Numerical methods, model conceptualization, assumptions, boundary conditions, and complex aquifer systems. Modeling exercises including full-scale modeling project using MODFLOW. (Lec. 2, Lab. 3) Pre: 483, or NRS 361 or CVE 588, or permission of instructor. Offered in odd-numbered years.

**584 (or NRS 584, or EVS 584) Environmental Hydrogeology (4)**

Develop an understanding of the physico-chemical principles and fundamental relationships that describe the fate and transport of contaminants in the hydrologic system. (Lec. 3, Lab. 2) Pre: 483 or CVE 588 or NRS 510 or permission of instructor.

**586 Readings in Hydrogeology (1-3)**

Seminar in hydrogeology with readings drawn from the current professional literature. S/U credit.

**590, 591 Special Problems (1-3 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. S/U credit for 591.

**601 (or EVS 601) Environmental Sciences Seminar (1)**

Guest speakers present the results of research in the field of environmental sciences with special focus on hydrologic environments. (Seminar)

**930 Workshop in Geology Topics for Teachers (0-3 each)**

Especially designed for teachers of physical sciences. Basic topics of geology from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

*Note: For other related courses, see OCG 540, 625, 628, 643, 644, 645, 646, 649, 651, 652, 678, 681; OCE 582, 688; and CVE 581, 585, 587, 588, 677, 681, 682, 687.*

**German (GER)**

*Section Head: Professor Hedderich*

**101 Beginning German I (3)**

Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior German is required. Will not count toward the language requirement if the student has studied German for more than one year within the last six years. (FC) [D]

**102 Beginning German II (3)**

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

**103 Intermediate German I (3)**

Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

**104 Intermediate German II (3)**

Continuation of 103. Students enrolling in this course should have taken 103 or equivalent. (Lec. 3) (FC) [D]

**105, 106 Basic Conversation I, II (1 each)**

105: Practice in conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 103. 106: Continued practice in conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 104.

**111, 112 Intensive Beginning German (4 each)**

Study of the fundamentals of German with special emphasis on listening and speaking skills. Students enrolling in 112 should have taken 111 or equivalent. (Lec. 4) Not for major credit in German.

**113, 114 Intensive Intermediate German (4 each)**

Practice in listening and speaking. Development of basic reading and writing skills. Review of grammatical structure. Students enrolling in 113 should have taken 112 or equivalent; students enrolling in 114 should have taken 113 or equivalent. (Lec. 4)

**201, 202 Intermediate Conversation I, II (1 each)**

Conversation skills for students who have completed intermediate German. 202: Continuation of 201. Students enrolling in 201, 202 should have taken 104 or equivalent. (Lec. 3)

**205, 206 Conversation and Composition (3 each)**

Development of facility in spoken and written German using contemporary writings and topics; special emphasis on general classroom discussion. Students enrolling in 205, 206 should have taken 104 or equivalent. (Lec. 3) (FC) [D]

**215, 216 Advanced Conversational German (4 each)**

Intensive practice in speaking and listening, with some attention to writing skills. Students enrolling in 215, 216 should have taken 114 or equivalent. (Lec. 4)

**221 Introduction to Business German (1)**

Conversational practice in German with emphasis on the acquisition of vocabulary pertinent to international business. (Lec. 1) Pre: 112 or equivalent.

**305 Advanced Conversation (3)**

Intensive practice in spoken German based on matters of current interest in German-speaking countries. (Lec. 3) Pre: 206 or equivalent. In alternate years.

**306 Advanced Composition (3)**

Training in various forms of writing by means of frequent compositions and critiques. (Lec. 3) Pre: 206 or equivalent. In alternate years.

**315, 316 Language Study Abroad (3-5 each)**

Credit for advanced language study in a German-speaking country. (Practicum) Pre: 206 or equivalent and permission of section head.

**327 Introduction to German Studies and Literature (3)**

Major developments and figures in German culture, literature, art, and society of the 20th century. (Lec. 3) Pre: 206 or permission of instructor.

**328 Introduction to German Cultural History and Literature (3)**

Overview of major German cultural developments starting with the "Germany" of the Romans and

ending with unification. Significant figures and developments in literature, art, and society. (Lec. 3) Pre: 206 (or equivalent) or permission of instructor.

**392 Masterpieces of German Literature (3)**

Literary works in English translation from 1800 to the present. (Lec. 3) Not for major credit in German.

**408 (or LIN 408) The German Language: Past and Present (3)**

Introduction to the history and present state of the German languages. Study of standard and colloquial German, dialects, Swiss and Austrian variations, language of youth and professions. Analysis of various test types. Tendencies in present-day German. (Lec. 3) Pre: 305 or permission of instructor. Not for graduate credit.

**411 Advanced Technical German**

See Engineering 411.

**421 Business German (3)**

Study of the concepts and terminology of the German language common to the realm of international business. Intended for advanced students of business and German. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in 305 and 306.

**485, 486 Special Studies (1-3 each)**

Special topics in German literature not emphasized in other courses. (Seminar) Pre: one semester of German at the 300 level or permission of section head. May be repeated with a change in topic. In alternate years.

**497, 498 Directed Study (1-3 each)**

Designed particularly for the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by a faculty member and permission of section head.

**585, 586 Seminar in German Studies (1-3 each)**

Topics in German literature and civilization. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topics.

**598 Directed Studies (1-3)**

Individual research on problems of special interest. (Independent Study) Pre: graduate standing, acceptance of project by a faculty member, and permission of chairperson. May be repeated with different topics.

**987, 988 German Play Production (1 each)**

Study and production of a German play or plays. (Workshop) Pre: 215 and 216 or equivalent. Students may enroll concurrently in 485, 486. S/U only.

## Gerontology

Director: Professor P. Clark

### Human Development and Family Studies

- 312 Adult Development
- 314 Introduction to Gerontology
- 421 Death, Dying, and Bereavement
- 431 Family and the Elderly
- 440 Environmental Context of Aging

- 513 Seminar in Adult Development
- 514 Seminar in Older Adulthood
- 527 Health Care Policy and the Elderly

### Human Science and Services

- 530 Multidisciplinary Health Seminars for the Elderly

### Kinesiology

- 563 Fitness Programs for the Middle-Aged and Elderly

- 564 Physiology of Aging

### Nursing

- 349 Aging and Health

### Nutrition and Food Science

- 395 Nutrition in the Life Cycle II

### Sociology

- 438 Aging in Society

## Greek (GRK)

Section Head: Professor Suter

For Modern Greek, see LAN 191, 192.

### 101 Ancient Greek I (3)

Grammar and syntax of Attic Greek, reading practice. (Lec. 3) Pre: no previous Greek is required. Will not count toward the language requirement if the student has studied Greek for more than one year within the last six years. (FC) [D]

### 102 Ancient Greek II (3)

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

### 301 Intermediate Greek I (3)

Grammar review; readings such as Lysias' *Against Eratosthenes*. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

### 302 Intermediate Greek II (3)

Readings selected in accordance with interests of students. Students enrolling in this course should have taken 301 or equivalent. (Lec. 3) May be repeated for credit with a different topic. May be taken once for General Education credit. (FC) [D]

### 310 Greek Across the Curriculum (1)

Reading of original Greek texts and discussion in conjunction with courses throughout the University curriculum. Designed to maintain language skills and to enrich the study of different subjects by texts in the original language. (Lec. 1) Pre: 301 or permission of instructor.

## 497, 498 Directed Study (1–6 each)

Individual readings and research. (Independent Study) Pre: acceptance of project by faculty member and approval of chairperson. May be repeated for credit with a different topic.

## Health Services Administration (HSA)

Coordinator: A. Hubbard

### 360 Health Services Administration (3)

Introduction to key concepts and principles in health services administration through both didactic and experiential means. (Seminar) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 60 credits.

### 380 Introductory Practicum in Health Services Administration (3)

Didactic and experiential introduction to the delivery of health services including acute care, long-term care, nursing homes, and special services problems such as hepatitis, tuberculosis, and HIV. (Practicum) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 75 credits.

### 480 Advanced Practicum in Health Services Administration (6)

An intensive experience in a health care setting selected by the student, combined with class meetings. (Practicum) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 90 credits. Not for graduate credit.

## Hebrew (HBW)

Chairperson: Professor Morello

### 101 Beginning Hebrew I (3)

Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Hebrew is required. Will not count toward the language requirement if the student has studied Hebrew for more than one year within the last six years. (FC) [D]

### 102 Beginning Hebrew II (3)

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

### 103 Intermediate Hebrew I (3)

Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

### 104 Intermediate Hebrew II (3)

Continuation of 103. Students enrolling in this course should have taken 103 or equivalent. (Lec. 3) (FC) [D]

## History (HIS)

Chairperson: Professor Schwartz

### 111 History of Ancient Greece and Rome (3)

From the Greek and Latin settlements to the Germanic invasions with emphasis on political, social, economic, and aesthetic developments. Includes rise of the Christian church. (Lec. 3) (L)

### 112 History of Medieval Europe (3)

Primarily western Europe. Continuation of 111. Medieval church, feudalism, revival of town life, commerce, industry, and money economy, rise of national states, and development in the arts. (Lec. 3) (L)

### 113 History of Western Civilization from the Late Middle Ages to 1789 (3)

Introductory course treating Western civilization in its broadest sense from the late Middle Ages to the French Revolution and the beginnings of industrialization. (Lec. 3) (L) [D]

### 114 History of Western Civilization Since 1789 (3)

Continuation of 113. Western civilization of the present time. (Lec. 3) (L) [D]

### 116 History of Western Science (3)

Development of western science from ancient Greece and Rome until the present. Topics include relations of science and religion, emergence of science-based industry, and interaction between science and politics, especially during war. (Lec. 3) (L)

### 117 History of Medicine (3)

Professionalization of medicine, status of healers in different cultures, creation of scientific medicine, alternative medical practice, effect of changing disease patterns on medical theory/practice. Focus on the U.S. in the 19th and 20th centuries. (Lec. 3) (L)

### 118 Women in European History (3)

Attitudes toward women, their role in society, women's work, and the feminist movement. Emphasis on 19th and 20th centuries with background material from earlier periods. (Lec. 3) (L) [D]

### 123 Modern British Civilization (3)

An introduction to British culture in the 19th and 20th centuries. Surveys of the impact of the Industrial Revolution, political developments, and social change; also Britain's role in the world, Ireland, and the world wars. (Lec. 3)

### 130 History and the Sea (3)

The history of seafaring from ancient times to the 20th century. The course considers the political, military, economic, and social history of the maritime world. (Lec. 3) (L) [D]

### 132 Introduction to Russian and Soviet History (3)

Selected topics in the development of Russian civilization since the ninth century. (Lec. 3) (FC) or (L) [D]

**141 History of the United States to 1877 (3)**  
 Colonial and Revolutionary periods, and economic, social, and political development of the United States through the Civil War and Reconstruction. (Lec. 2, Rec. 1) (L) [D]

**142 History of the United States Since 1877 (3)**  
 General social, economic, and political development from 1877 to the present. (Lec. 2, Rec. 1) (L) [D]

**145 Women in the North American Colonies and the United States, 1500–1890 (3)**  
 Legacies of Native-American, Hispanic, and Anglo-American culture; slavery and abolition; women's work and sexuality; women's rights movements; ethnic and regional diversity, with emphasis on women in the West, the South, and Northeast. (Lec. 3) (L) [D]

**146 Women in the United States, 1890–Present (3)**  
 Impact of immigration and industrialization; legacy of slavery and segregation; changes in sexuality, reproduction, and work; images of women in popular culture; women's political movements. (Lec. 3) (L) [D]

**150 (or AAF 150) Introduction to Afro-American History (3)**

Survey of Afro-American history from African origins to the current racial confrontation. (Lec. 3) (L) [D]

**160 Technology and American Life: 1800–Present (3)**

Surveys the development and social impact of technology on American life during the past two centuries. (Lec. 3) (L) [D]

**171 East Asian Culture and History (3)**

Introduction to the culture and history of East Asia. Emphasis on the literary, artistic, and philosophical traditions of East Asia, especially those aspects which relate to and influence contemporary developments. (Lec. 3) (FC) or (L) [D]

**172 Southeast Asian Culture and History (3)**

Broad overview of the culture and history of Southeast Asia. Emphasis on society, culture, and religion and their influence on contemporary developments. (Lec. 3) (FC) or (L) [D]

**177 The Islamic Middle East: From the Mongols to Modern Times (3)**

History of the Islamic Middle East from the Mongol invasions of the 13th century to the present. Includes the Ottoman Empire, the impact of European colonialism, the rise of nationalism, the Arab-Israeli conflict, and the Iranian revolution. (Lec. 3)

**180 Introduction to Latin American Civilization (3)**

Social, cultural, and political history of the Latin American region from the preconquest era to the present time. (Lec. 3) (FC) or (L) [D]

**300 Ancient Greece: Hellenic and Hellenistic Period from the Trojan Wars to Alexander the Great, 800 B.C.–300 B.C. (3)**

Social, economic, political and intellectual development of Greece from the Archaic to Hellenistic period. (Lec. 3) Pre: sophomore standing or permission of instructor.

**303 From Republic to Empire: Ancient Rome (3)**

Social, economic, political, and intellectual history of Ancient Rome, covering the foundation of the city, the Roman Republic and Empire, and the spread of Christianity. From about 750 B.C. to about 300 A.D. (Lec. 3) Pre: sophomore standing or permission of instructor.

**304 Western Europe in the High Middle Ages (3)**

Primarily France and England in the 12th and 13th centuries. Emphasis on the medieval Gothic-Catholic culture, the rise of towns, and the development of a money economy. (Lec. 3) Pre: sophomore standing or permission of instructor.

**305 The Renaissance (3)**

Europe in transition during the 14th through the early 16th centuries. The economic, social, and religious backgrounds of the Renaissance. Emphasis on culture and artistic developments. (Lec. 3) (L) Pre: sophomore standing or permission of instructor.

**306 The Protestant and Catholic Reformation I (3)**

Change of European society resulting from the Protestant Reformation and Catholic Reaction; rise of secular states and emerging national states; effects of religious crises upon culture and society. (Lec. 3) Pre: sophomore standing or permission of instructor.

**307 The Protestant and Catholic Reformation II (3)**

Catholic and Counter Reformation, Northern Renaissance, wars of religion, social and cultural manifestations of the early Baroque. (Lec. 3) Pre: sophomore standing or permission of instructor.

**308 Between Eve and Mary: Women in the Middle Ages (3)**

History of women in western Europe from about 500 A.D. to about 1500 A.D. Understanding the variety of medieval women's experiences (rich or poor, secular or religious, urban or rural) and how women were perceived by their society. (Lec. 3) Pre: sophomore standing or permission of instructor.

**309 The French Revolution and Napoleon (3)**

Examination of the Revolution and Napoleonic eras with emphasis on the connections among economic, social, and political developments. Special attention to problems in interpretation. (Lec. 3) Pre: junior standing.

**310 History of Europe: 1815–1914 (3)**

Major political, economic, and intellectual developments in Europe from the defeat of Napoleon I to the outbreak of World War I; emphasis on the revolutions of 1848, unification of Italy and Germany,

impact of the Industrial Revolution, nationalism and imperialism, background of World War I. (Lec. 3) Pre: junior standing. (L) [D]

**311 History of Europe Since 1914 (3)**

Detailed study of developments from 1914 to present: wars, postwar adjustments, communist and fascist ideologies, history of individual states, and social and intellectual trends. (Lec. 3) Pre: junior standing. (FC) or (L) [D]

**314 Seventeenth- and Eighteenth-Century European Cultural History (3)**

Intellectual and social movements of the Age of Reason and the Age of Enlightenment. (Lec. 3) Pre: sophomore standing or permission of instructor. (L)

**323 History of Great Britain in the 19th Century (3)**

Politics, culture, and economy of Great Britain in the 19th century: elements of both continuity and change in the social life and organization of its inhabitants, and in their religious and social beliefs: effects of British imperial expansion on the colonizers and on the colonized. (Lec. 3) Pre: sophomore standing or permission of instructor. (L) [D]

**327 German History Since 1914 (3)**

Topics in German social and political history from the first world war to the present. Emphasis on the history of National Socialism. (Lec. 3) Pre: sophomore standing or permission of instructor. (FC) or (L) [D]

**328 The Holocaust (3)**

Study of Nazi efforts to exterminate Jews and others in Europe. Focuses on Nazi programs and policies; Jewish experiences; and the responses of the outside world. (Lec. 3) Pre: junior standing.

**332 History of Imperial Russia (3)**

Russian society, politics, and world view from the modernizing reforms of Peter the Great to the installation of parliamentary government in 1905. Emphasis on student writing, analysis of documents, trends, interconnections. (Lec. 3) Pre: sophomore standing or permission of instructor. (L) [D]

**333 Twentieth Century Russia (3)**

From Imperial Russia's progress toward modernization to society, economy, and politics in the 1990s. The Soviet experiment is studied from domestic and international angles. Close attention given to the Stalin Revolution, Cold War, and attempts to revitalize the one party state. (Lec. 3) Pre: sophomore standing or permission of instructor. (L) [D]

**335 American Colonial History to 1763 (3)**

American history from the founding of the colonies to the end of the French and Indian War, including developments within the colonies as well as their relationship with England. (Lec. 3) Pre: sophomore standing or permission of instructor.

**336 The American Revolution and Confederation: 1763–1789 (3)**

Social, political, and economic aspects of the Revolution and Confederation periods. (Lec. 3) Pre: sophomore standing or permission of instructor.

**337 Creation of the Union: America from 1789–1848 (3)**

The development of the new nation through the Jacksonian years, with emphasis on the transformation of society and politics. (Lec. 3) Pre: sophomore standing or permission of instructor.

**339 Emergence of Industrial America: 1877–1914 (3)**

Growth and consolidation of business, urbanization, and the Populist and Progressive movements. America's emergence as a world power. (Lec. 3) Pre: sophomore standing or permission of instructor.

**340 United States History from 1914 to 1941 (3)**

Social, political, and economic developments in the U.S. from the onset of World War I through the end of the Great Depression. (Lec. 3) Pre: sophomore standing or permission of instructor. (L) [D]

**341 United States History from 1941 to 1974 (3)**

U.S. involvement in World War II. Social, political and economic developments in the postwar era. Equal emphasis on the domestic sphere and America's role in world affairs. (Lec. 3) Pre: sophomore standing or permission of instructor. (L) [D]

**344 History of the North American Indian (3)**

Native North Americans from pre-Columbian times to present. Emphasis on ideological conflict between Indians and whites. (Lec. 3) Pre: sophomore standing or permission of instructor.

**346 Immigration, Ethnicity and Race in America (3)**

History of immigration to the U.S. from the colonial period to the present, with emphasis on the 19th and 20th centuries. Compares different waves, explores shifting attitudes toward immigrants, and discusses how race and ethnicity shaped immigrants' experiences. (Lec. 3) Pre: sophomore standing or permission of instructor. (L) [D]

**349 History of American Labor (3)**

Changes in work, lifestyle, and political consciousness of American workers in the 19th and 20th centuries; conflicts between labor and capital, and relationship to emergence of labor movements. (Lec. 3) Pre: sophomore standing or permission of instructor.

**350 Family Matters: History of Family Life in the United States (3)**

The experiences of America's families from European settlement to the present. Emphasis on how family life has varied over time, from place to place, among different ethnic and social groups, and according to gender. (Lec. 3) Pre: junior standing or permission of instructor.

**351 History of Women in Medicine (3)**

Examines the history of women healers, including midwives, nurses, and physicians. Topics in women's health care, especially concerning reproduction and childbirth, will also be addressed. (Lec. 3) Pre: junior standing or permission of the instructor. (L) [D]

**352 Topics in the History of Women and Gender (3)**

Themes in women's history, sexual identities, and the construction of gender roles. Primarily deals with United States since 1800. (Lec. 3) Pre: junior standing or permission of instructor. May be repeated.

**353 United States Diplomatic History to 1914 (3)**

Analysis of the people, ideas, and institutions that shaped the rise of the United States from thirteen colonies to the most powerful nation in the world. (Lec. 3) Pre: sophomore standing or permission of instructor.

**354 United States Diplomacy in the 20th Century (3)**

Analysis of people, ideas, and institutions that have shaped American relations with the rest of the world from World War I to the present. (Lec. 3) Pre: sophomore standing or permission of instructor.

**355 (or AAF 355) Black Women in the U.S.: Colonial Times to the Present (3)**

Women's experiences in the study of African-American history. Assigned readings familiarize students with the state of scholarship and examine the intersection of race, class, and gender in that experience. (Lec. 3) Pre: sophomore standing. (L) [D]

**356 (or AAF 356) Black Urban History: Late 19th and 20th Centuries (3)**

Examines the historical black experience in urban environments in the U.S. Assigned readings, research, and group discussions examine the issues of migration, community, politics, class, and gender. (Lec. 3) Pre: sophomore standing. (L) [D]

**357 History of Religion in the United States (3)**

Diversity of religious traditions in the U.S. especially in the 19th and 20th centuries. Emphasis on political, cultural, and ethic/racial dimensions of religion. (Lec. 3) Pre: sophomore standing or permission of instructor.

**358 Recent America in Film (3)**

An investigation of American culture and history since 1930 using films as the major resource for study, with emphasis on the Great Depression, World War II, sexual interaction, and race relations. (Lec. 1, Lab. 4) Pre: sophomore standing or permission of instructor.

**359 (or AAF 359) History of Slavery in America (3)**

Origins, development, and demise of slavery, with emphasis on the area that currently constitutes the United States. (Lec. 3) Pre: sophomore standing or permission of instructor.

**360 American Culture 1865–1940 (3)**

Explores the nature and sources of American culture with emphasis on the diversity of its origins and forms of expression. (Lec. 3) Pre: sophomore standing or permission of instructor.

**362 History of Rhode Island (3)**

History of Rhode Island from the first English settlement to the present day. Social, political, and economic aspects of internal development and the relation of the state to the region and the nation. (Lec. 3) Pre: sophomore standing or permission of instructor.

**365 Civil War and Reconstruction (3)**

American history during the period 1850–1877, giving equal emphasis to the background of the Civil War, the war itself, and the social, political, and economic aspects of Reconstruction. (Lec. 3) Pre: sophomore standing or permission of instructor.

**366 (or AAF 366) Black Political Thought During the Age of Civil Rights and Black Power (3)**

Examines black social and political thought during the Civil Rights and Black Power eras. (Lec. 3) Pre: sophomore standing.

**367 (or AAF 367) Contemporary African-American Political Thought (3)**

Examines the contradictions of American social and public policy over the past quarter-century and analyzes black responses to a shifting domestic and international terrain. (Lec. 3) Pre: junior standing or permission of instructor.

**374 History of Modern China (3)**

Political, social, economic, and cultural development of China since 1800 with emphasis on the development of Chinese nationalism and on the rise, theory, and practice of Chinese communism. (Lec. 3) Pre: sophomore standing or permission of instructor. (FC) or (L) [D]

**375 History of Modern Japan (3)**

Background and significance of the Meiji restoration (1868) and modernization; the development of Japanese militarism, the fall of the Japanese Empire, and the emergence of the "New Japan." (Lec. 3) Pre: sophomore standing or permission of instructor. (FC) or (L) [D]

**376 Women in Muslim Societies (3)**

Examines gender relations in the modern Middle East through novels, poetry, and oral histories, as well as through historical and anthropological studies. (Lec. 3) Pre: sophomore standing or permission of instructor.

**377 Revolution in Islam (3)**

Examines the history of revolutionary ideology in Islamic thought and places modern revolutions—such as the Iranian revolution of 1978—within a broader context of both Sunni and Shi'i radical activism.

(Lec. 3) Pre: sophomore standing or permission of instructor.

**378 Arab-Israeli Conflict (3)**

An examination of the roots of Arab nationalism and modern political Zionism; conflict between the World Wars; the creation of the state of Israel and the causes of continuing conflict since its creation. (Lec. 3) Pre: sophomore standing or permission of instructor.

**381 History of Colonial Latin America (3)**

The interaction of American-Indian civilizations with European and African elements in the Spanish and Portuguese empires of the New World, concluding with the wars for independence. (Lec. 3) Pre: sophomore standing or permission of instructor.

**382 History of Modern Latin America (3)**

Historical analysis of the political, cultural, and social-economic dimensions of tradition, reform, and revolution in Latin America since 1810. (Lec. 3) Pre: sophomore standing or permission of instructor.

**384 The Caribbean: New World/Third World (3)**

Historical and contemporary development of the Caribbean world, emphasizing efforts by the region's peoples to achieve political, economic, and cultural independence from external domination. (Lec. 3) Pre: sophomore standing or permission of instructor.

**385 Revolution and Unrest in Central America and the Caribbean (3)**

Historical origins of social unrest in Central America and the Spanish-speaking Caribbean. Cuban and Nicaraguan revolutions, civil conflict in Guatemala and El Salvador, U.S. policy. (Lec. 3) Pre: sophomore standing or permission of instructor.

**388 (or AAF 388) History of Sub-Saharan Africa (3)**

Ancient and medieval Africa, and the impact of Islam; the "Glorious Age" of the Sudanic empires; the slave trade and the age of exploration; the period of European partition and the rise of African nationalism. (Lec. 3) Pre: junior standing.

**389 Exploration, Commerce, and Conflict in the Atlantic World, 1415–1815 (3)**

The Atlantic world from the 15th to early 19th centuries. Voyages of exploration, cultural contact, Atlantic economy, piracy, smuggling, fishing, naval warfare, imperialism, migration, and life at sea in the Age of Sail. (Lec. 3) Pre: sophomore standing or permission of instructor.

**390 The Atlantic World in the Age of Iron, Steam, and Steel (3)**

The Atlantic world in the 19th and early 20th centuries. Maritime technology, seaborne commerce, naval warfare, imperialism, migration, whaling, the slave trade, piracy, and life at sea. (Lec. 3) Pre: sophomore standing or permission of instructor.

**391 Directed Study or Research (3)**

Special work arranged to meet the needs of individual students who desire advanced work. (Independent Study) Pre: permission of chairperson. May be repeated for a total of 6 credits with permission of instructor and chairperson.

**393 Topics in History (1–3)**

Subject, course content, and years offered will vary according to expertise and availability of instructors. (Lec. 1–3) May be repeated for credit with permission of chairperson. Pre: sophomore standing or permission of instructor.

**396 Maritime History and Underwater Archaeology Field School (3)**

Usually, but not exclusively, taught in Bermuda. Students may select an archaeological diving option, an archaeological non-diving option, or an archival research option. Pre: junior standing and those students who select the archaeological diving option will be required to go through the URI research diving certification process prior to departure.

**397 The Historical Landscape of Britain (3)**

Taught in England. Examines the impact of political, military, religious, economic, and social change in the past six or seven centuries on the landscape of village and field and town and country. (Lec. 2, Lab. 3) Usually taught in conjunction with ENG 397. Pre: sophomore standing or permission of instructor.

**398 History Through Science Fiction (3)**

Ideas about history in popular culture as seen in the literary genre of science fiction. (Lec. 3) Pre: sophomore standing or permission of instructor.

**401 Advanced Topics in European History (3)**

Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor. May be repeated for credit with permission of chairperson.

**441 Advanced Topics in American History (3)**

Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor. May be repeated for credit with permission of chairperson.

**481 Advanced Topics in Asian or Latin American History (3)**

Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor.

standing in history or permission of instructor. May be repeated for credit with permission of chairperson.

**490 (or APG 490) Underwater Historical Archaeology (3)**

Methodological and theoretical foundations of underwater historical archaeology. Examines the contribution of shipwrecks and other inundated sites to our understanding of the global nature of modern life. (Seminar) Pre: At least 3 credits of course work at the 300-level in history, anthropology, or art history, or permission of instructor.

**495 Seminar in History (3)**

Development of skills in historical research and writing and in the critical analysis of historical works. Topics vary. (Seminar) Pre: completion of 401 or 441 or 481, with the same instructor, or permission of the department. This course is required of undergraduate history majors. May be repeated for credit with different topic with permission of instructor.

**502, 503 Special Readings in European History (3 each)**

Intensive tutorial work, research, and readings in European history. (Independent Study) Pre: graduate standing, permission of instructor, and concurrent audit of parallel 300-level course. May be repeated.

**506 Seminar in European History (3)**

Selected topics in European history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation. (Seminar) Pre: graduate standing or permission of instructor.

**507 Seminar in United States History (3)**

Selected topics in United States history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation. (Seminar) Pre: graduate standing or permission of instructor.

**508 Seminar in Asian or Latin American History (3)**

Selected topics in Asian or Latin American history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation. (Seminar) Pre: graduate standing or permission of instructor.

**536, 537 Special Readings in American History (3 each)**

Intensive tutorial work, research, and readings in American history. (Independent Study) Pre: graduate standing, permission of instructor, and concurrent audit of parallel 300-level course. May be repeated.

**544 Colloquium in Worker History**

See Labor and Industrial Relations 544.

**588, 589 Special Readings in Asian or Latin American History (3 each)**  
 Intensive tutorial work, research, and readings in Asian or Latin American history. (Independent Study)  
 Pre: graduate standing and permission of instructor. Concurrent audit of parallel 300-level course. May be repeated.

**591 Directed Study or Research (3)**  
 Directed readings, research, or study designed to meet the particular needs of individuals or small groups of graduate students. (Independent Study)  
 Pre: permission of chairperson.

**599 Master's Thesis Research**  
 Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Honors Program (HPR)

*Director: Professor R. McIntyre*

*Honors courses (HPR) are open only to eligible students. See page 42 of this catalog or the Honors Program brochure for requirements. Sections of honors courses that have been approved for general education credit are marked.*

**101 Analytical Thinking in the Humanities (3)**  
 Identification and comparison of analytical and critical methods employed by humanistic disciplines. Practice in their application. (Seminar)

**102 Analytical Thinking in the Social Sciences (3)**  
 Identification and comparison of the analytical and critical methods employed in the social sciences. Practice in their application. (Seminar)

**103 Analytical Thinking in the Natural Sciences (3)**  
 General themes in science as the basis for studying the "scientific method" and methods of analytical thinking common to problem solving in the sciences. (Seminar)

**104 Analytical Thinking in Letters (3)**  
 Identification and comparison of analytical and critical methods employed by historians and philosophers. Practice in their application. (Seminar)

**105 Honors Study in Fine Arts and Literature (3)**  
 Exploration of themes, topics, and techniques in the fine arts and in literature. (Seminar) Fall 2007: Art History: Renaissance to Modern (Honors section of ARH 252) (A)[D]; Introduction to Film Media (Honors section of FLM 101) (A)[D]; The Origins of Fantasy (A). Spring 2008: Understanding the Feature Film (A); The Creative Process (A).

**106 Honors Study in Foreign Language and Culture (3)**  
 Exploration of themes and topics relating to foreign languages and cultures. (Seminar)

**107 Honors Study in Letters (3)**  
 Exploration of themes and topics in the field of Letters. (Seminar) Spring 2008: Modern Thought: Philosophy and Literature (Honors section of PHL 235 or CLS 235) (L); Spain, the Jews, and the Inquisition.

**108 Honors Study in Mathematics (3)**  
 Exploration of topics and creative use of problem solving in mathematics. (Seminar) Fall 2007: Computer Forensics (MQ).

**109 Honors Study in Natural Sciences (3)**  
 Exploration of themes and topics in the natural sciences. (Seminar) Fall 2007: Biology for the Citizen (N). Spring 2008: Life in the Universe (N).

**110 Honors Study in Social Sciences (3)**  
 Exploration of themes and topics in the social sciences. (Seminar) Fall 2007: Psychology of Violence and Nonviolence (S) [D]. Spring 2008: The Irish in Ireland, the United States, and Rhode Island. (S)[D]

**111 Honors Study in English Communication (3)**  
 Exploration of the elements of English communication. (Seminar)

**112 Honors Study in Writing (3)**  
 Exploration of the elements of writing. (Seminar) Fall 2007: Three-Quarters of the World (Honors section of WRT 104) (ECw).

**113 Honors Course in Philosophy (1-4)**  
 (Seminar)

**114 Honors Course in History (1-4)**  
 (Seminar)

**115 Honors Course in Political Science or Economics (1-4)**  
 (Seminar) Fall 2007: Honors section of ECN 100 (S) [D].

**116 Honors Course in Sociology or Anthropology (1-4)**  
 (Seminar)

**117 Honors Course in Psychology (1-4)**  
 (Seminar) Spring 2008: General Psychology (Honors section of PSY 113) (S)[D].

**118 Honors Course in Speech Communication or Journalism (1-4)**  
 (Seminar) Fall 2007: Honors section of JOR 110 (L) or (S) [D]; Fall 2007 and Spring 2008: Honors sections of COM 100 (EC) [D].

**119 Honors Course in Interdisciplinary Studies (1-4)**

(Seminar) Fall 2007: Understanding Global Business (Honors section of BUS 140); Financial Accounting and Analysis (HPR section of BUS 201); Textiles Products (Honors section of TMD 103). Spring 2008: Loss in the Lives of Children and Adolescents (service learning); Culture, Dress and Appearance (Honors section of TMD 224) (FC)[D] or (S)[D].

**121 Honors Course in Mathematics (1-4)**  
 (Seminar) Fall 2007: Honors section of MTH 108 (MQ).

**122 Honors Course in Physical Sciences (1-4)**  
 (Seminar) Fall 2007: Honors section of PHY 203 (N); Honors section of PHY 203 (N); Honors section of PHY 273 (N). Spring 2008: Honors section of PHY 204 (N); Honors section of PHY 274 (N).

**123 Honors Course in Biological Sciences (1-4)**  
 (Seminar)

**124 Honors Course in Fine Arts (1-4)**  
 (Seminar)

**125 Honors Course in Language or Literature (1-4)**  
 (Seminar)

**201, 202 Honors Colloquium (3-4 each)**  
 (Lec. 2-3, Rec. 1-2) May be repeated for a maximum of 8 credits each. Fall 2007: China Rising: Contemporary China (FC) or (L) [D]. Spring 2008: Extreme Literature.

**203 The Prepared Mind: Critical and Analytical Problem Solving (3)**  
 Introduction to problem solving through the development of creativity, critical thinking, and communication skills. Focus on individual development in these areas. (Seminar)

**301, 302 Honors Tutorial (3 each)**  
 (Practicum) Fall 2007 and Spring 2008: Administrative Internship.

**311 Honors Tutorial in Fine Arts (1-3)**  
 (Seminar) Fall 2007: Rebel Images in American Film. Spring 2008: Blood of my Blood: Italian-American Film.

**312 Honors Tutorial in Language or Literature (1-3)**  
 (Seminar) Spring 2008: Dwarves and Elves: The World According to Tolkien.

**313 Honors Tutorial in Philosophy (I and II, 1-3)**  
 (Seminar) Fall 2007: Art and Justice. Spring 2008: Engineering Ethics (Honors section of PHL 316 or EGR 316) (L)[D].

**314 Honors Tutorial in History (1-3)**  
 (Seminar) Spring 2008: Honors section of HIS 328.

**315 Honors Tutorial in Political Science or Economics (1-3)**  
 (Seminar) Fall 2007: Honors section of PSC 377. Spring 2008: Honors section of PSC 342; Honors section of PSC 466 (or AAF 466).

**316 Honors Tutorial in Sociology or Anthropology (1-3)**  
 (Seminar)

**317 Honors Tutorial in Psychology (1-3)**  
(Seminar)

**318 Honors Tutorial in Speech Communication or Journalism (1-3)**

(Seminar) Spring 2008: Intercultural Communications.

**319 Honors Tutorial in Interdisciplinary Studies (1-3)**

(Seminar) Fall 2007: Honors section of NUR 360 (L)[D]; From Tin Pan Alley to Swing; Century of Limits. Spring 2008: Land Use and Abuse; The Global Challenge of Emerging Infectious Disease; Immersion and the Modern Art Work; Spirituality and Mysticism; Literacy in Rhode Island.

**321 Honors Tutorial in Mathematics (1-3)**  
(Seminar) Spring 2008: Problem Solving.

**322 Honors Tutorial in Physical Sciences (1-3)**

(Seminar) Fall 2007: Elementary Physics III (Honors section of PHY 205) (N).

**323 Honors Tutorial in Biological Sciences (1-3)**  
(Seminar)

**331, 332 Honors Tutorial in Human Science and Services (1-3 each)**  
(Seminar)

**341, 342 Honors Tutorial in Business (1-3 each)**

(Seminar) May be repeated with different topics for a maximum of 12 credits each. Fall 2007: Honors section of BUS 340; Honors section of BUS 365; Honors section of BUS 320.

**351, 352 Honors Tutorial in Nursing (1-3 each)**  
(Seminar)

**361, 362 Honors Tutorial in Engineering (1-3 each)**  
(Seminar)

**371, 372 Honors Tutorial in Resource Development (1-3 each)**  
(Seminar)

**381, 382 Honors Tutorial in Pharmacy (1-3 each)**  
(Seminar)

**401, 402 Honors Project (3 each)**

(Independent Study) Fall 2007 and Spring 2008: Senior Honors Project.

**411, 412 Honors Seminar (3 each)**

(Seminar) Fall 2007: Voices of Katrina; The Life and Thoughts of Martin Luther King, Jr.; Controversies in Environmental Science; Fictions of Ability and Disability; Film and Video Practicum. Spring 2008: Honors section of BUS 441; Honors section of BUS 445; Plant Plagues: Causes and Consequences; Globalization, Work, and Human Rights.

## **Human Development and Family Studies (HDF)**

*Chairperson: Professor Adams*

**180 Personal and Career Development in Human Services (1)**

Exploration of skills and interests related to career development. Seminar for human service career opportunities. Understanding of short- and long-term goal process emphasized. (Seminar) HDF students only.

**190 First Year Leaders Inspired to Excellence (2)**

Leadership development course focusing on leadership theories, personal and academic adjustment issues, civic leadership and community service, and basic communication skills. Core requirement for the minor in leadership studies. (Lec. 2) Pre: concurrent enrollment in URI 101.

**200 Life Span Development I (3)**

Physical, social, cognitive, and emotional growth and development of young children within the family and varied cultural settings. Review of contemporary issues and their relevance for social policy. (Lec. 3)

**201 Life Span Development II (3)**

Physical, social, cognitive, and emotional growth and development from adolescence to senescence. Attention to varied cultural settings and relevant social policy. (Lec. 3)

**202 Research Perspectives in Human Development and Family Studies (3)**

Introduction to research processes in human development and family studies. Emphasis on reading and evaluating the research literature and preparing and presenting literature reviews. (Lec. 3) Pre: admission to the human development and family studies program.

**203 Introduction to Work with Children (4)**

Theory and practice in care, teaching, and guidance of preschool children. Lectures, discussion, and participation in a field setting for three hours a week. (Lec. 3, Lab. 3) Pre: 200 or PSY 232.

**205 Family Financial Issues Across the Life Span (3)**

Introduction to financial issues faced by families and individuals at each stage of the life cycle from different income levels, family types, and cultural backgrounds. (Lec. 3).

**210 Family Resource Management (3)**

Interaction of resources, goals, and managerial processes in the home seen in the context of the larger community. Applications primarily in the area of human resources. (Lec. 3) Pre: 205 or permission of chairperson.

**225 Consumer in the Economy (3)**

Application of basic economic principles to consumer problems in a complex marketplace, buyer-seller

relationships, effective consumer decision making, effects of government policies on consumers. (Lec. 3/Online) Pre: 205 or course in economics. (S)

**230 Marriage and Family Relationships (3)**

Male-female and other close relationships in courtship and family systems as influenced by personality and culture in a changing society. Professional and functional orientation. (Lec. 3)

**290 Modern Leadership Issues (3)**

Introductory leadership class. Topics include basic leadership theories, international governance/economic systems, critical thinking, and leadership in: U.S. education; community service organizations; families; diverse workplaces. Core option for the leadership studies minor. (Lec. 3)

**297 Contemporary Issues in Student Development (1-3)**

Student orientation, leadership, and training practices presented by various Student Affairs and other University programs, such as Student Life, Residential Life, Health Services, University College, and Affirmative Action. (Seminar) May be repeated for up to 6 credits. S/U only.

**298 Contemporary Issues in Student Development (1-3)**

Student leadership models and practices in various student development settings, such as Student Affairs, Student Life, Residential Life, University College, and Health Services. (Seminar) Topic A: FLITE is service learning.

**301 Curriculum in Early Childhood (3)**

Program planning and teaching techniques that foster development of the young child in all curriculum areas. Includes Piagetian assessment and three hours per week in a local child care setting. (Lec. 2, Lab. 3) Pre: 203 and admission to the early childhood education program, or permission of instructor.

**302 Literature for Children (3)**

Literary heritage of American children from all subcultures, and criteria for the selection and presentation of literature to children. (Lec. 3) Pre: junior standing.

**303 Early Childhood Practicum (4)**

Early childhood curriculum design and assessment; supervised teaching for three hours a week in the Child Development Center with preschool and kindergarten age children. (Lec. 3, Lab. 3) Service learning. Pre: 301 and admission to the early childhood education program or permission of instructor.

**306 Infant Development (4)**

Study of development in the first three years including family interaction and early education. Emphasis is on cultural differences in parenting. Supervised observation/participation working with infants and toddlers three hours a week included. (Lec. 3, Lab. 3) Pre: 200 or PSY 232.

**310 Adolescent Growth and Development (3)**

Physical, psychological, social, and emotional growth and development of the individual during adolescent years. Lecture, discussion, and participation in a field setting with concurrent enrollment in 311. (Lec. 3) Pre: 201 or permission of instructor.

**311 Early Field Experience With Adolescents (1)**

Supervised observation and participation experience working with adolescents. Pre: concurrent with 310. S/U only.

**312 Adult Development (3)**

Identification of influences, processes, and forces shaping adult development to late life. Environmental and lifetime theoretical approaches emphasized and stage theories reviewed. (Lec. 3) Pre: 201 or permission of instructor.

**314 Introduction to Gerontology (4)**

Introduction to the study of aging processes: biological, psychological, and social theories. Health, social, and other age-related problems. Lecture, discussion, and participation in a field setting. (Lec. 3, Lab. 3) Pre: completion of 24 or more credits.

**357 Family and Community Health (3)**

Specific health and maintenance concerns throughout the life span. Community and world health needs and related agencies. (Lec. 3) Pre: junior standing.

**400 Child Development: Advanced Course (3)**

Review and critique of major theories of child development. Examination of research studies and issues associated with the first decade of life. Emphasis on cultural contexts. (Lec. 3) Pre: 200 or PSY 232 and HDF 201.

**418 Personal Finance (3)**

Personal financial planning and decisions for attaining individual and family goals. Factors that affect, protect, and enhance financial security. (Lec. 3) Pre: completion of 24 or more credits.

**421 Death, Dying, and Bereavement (3)**

Exploration of human death, dying, and bereavement. Focus on biomedical, psychological, social, and multicultural dimensions. Implications for social policy. (Lec. 3) Pre: junior standing or above.

**424 Personal Finance Applications (3)**

Application of principles of family financial planning and decision making. Emphasis on mathematical and analytical evaluation and analysis including the use of computer software. (Lec. 3/Online) Pre: 418 or permission of instructor.

**426 Retirement Planning (3)**

Explanation and evaluation of financial information needed for effective retirement planning, including defining goals, estimating expenses, and analyzing resources. Pre: 418 or permission of instructor.

**428 Consumer Protection (3)**

Effectiveness of diverse approaches to consumer protection. Analysis of techniques such as information disclosure, standards for products and services, government and private agencies, redress channels, and legislation. (Lec. 3/Online) Pre: 205 or 225 or permission of instructor.

**430 Family Interaction (3)**

Interdisciplinary approach to the dynamics of intra-family relationships, interactions of family units and family members within the sociocultural environment. Implications for social policy. (Lec. 3) Pre: 202 and 230.

**431 Family and the Elderly (3)**

Emphasis on the elderly in analysis of intergenerational organization and relationships. Cultural values, psychosocial factors, economic considerations, and societal trends relative to family life. (Lec. 3)

**432 Perspectives on Parenting (3)**

Historic examination of childhood and parenting philosophies and comparison of practices among different cultures. Attention to contemporary social policy and practices surrounding parenting. (Lec. 3) Pre: 200 or PSY 232.

**433 Family Life Education (3)**

History, philosophy, and goals of Family Life Education including requirements for certification. Program planning, implementation, and evaluation. Current issues, trends, research, and theory. Emphasis on diversity of clientele and settings. (Lec. 3) Pre: 202 and 230.

**434 Children and Families in Poverty (3)**

Interdisciplinary approach to understanding the effects of poverty with attention to cultural, political, and policy issues and implications. (Lec. 3) Service learning. Pre: senior standing in the major or permission of instructor and 202.

**437 (or SOC 437) Law and Families in the United States (3)**

Seminar to investigate family roles, relationships, rights, and responsibilities as defined by the law. Emphasis on explicit and implicit family policy revealed in the various branches of law. (Seminar) Pre: 200 and 230 or SOC 212.

**440 Environmental Context of Aging (3)**

Study of normal aging-related changes as design determinants of the physical environment. Identifies theories and models of person-environment interaction and environment-behavior issues and procedures for post-occupancy evaluation studies. (Lec. 3) Pre: 202 and 314.

**450 Introduction to Counseling (3)**

Introduces students in human sciences to interviewing and counseling skills in both professional and paraprofessional settings. Integrates theory, practice, and application by didactic and experimental learn-

ing. (Lec. 3) Pre: senior standing in HDF, graduate standing, or permission of instructor.

**451 Financial Counseling and Debt Management (3)**

Examination of debt and budgeting problems affecting families. Utilization of a problem-solving approach and inclusion of financial counseling strategies for coping with financial issues and becoming proactive in family financial management. (Lec) Pre: 418 and 450.

**455 Assessment in Early Childhood (3)**

An overview of cognitive, affective, and psychomotor assessments used by early assessment techniques, and examination of current trends and practices. (Lec. 3) Pre: student teaching or equivalent and permission of instructor. In alternate years. Next offered spring 2008.

**456 Assessment Practicum (3)**

Supervised experience in completing cognitive, affective, and psychomotor assessments of young children. (Practicum) Pre: credit or concurrent enrollment in 455. In alternate years. Next offered spring 2008.

**458 R.I. Early Learning Standards (3)**

Prepares early childhood professionals to implement the R.I. Early Learning Standards in diverse early care and education settings to increase program quality and support children's learning and development. (Lec. 3) Pre: enrollment in R.I. Early Learning Standards Project sponsored by R.I. Dept. of Education. S/U only for undergraduate students. A-F grades for graduate students.

**471 Responding to Grief (3)**

Examines conceptual, psychosocial, somatic, and pragmatic issues faced when grieving and how to cope or assist others accommodating imminent or realized loss due to death. (Lec. 3) Pre: 421, or prior thanatology course or permission of instructor.

**477, 478 Field Experience in Family Financial Counseling and Planning (3)**

Approved, supervised work experience related to consumer well-being. Examples include research, advocacy, education, and dissemination of information, or provision of service. (Practicum) Pre: senior standing or permission of instructor. S/U credit. Not for graduate credit.

**480 Senior Field Experiences in Community Agencies (6-12)**

Senior field experience in community agencies. (Practicum) Service learning. Pre: concurrent enrollment in 481; senior standing and permission of instructor. Application must be made on or before Feb. 1 in the year preceding internship. Orientation and learning contract occurs semester before field work. Not for graduate credit. S/U only.

**481 Field Experience Seminar and Reflections (1)**  
Group discussions of field experiences in community agencies and related academic assignments. Includes senior reflections and portfolio. (Seminar) Service learning. Pre: permission of instructor. Not for graduate credit.

**492 Leadership Minor Portfolio (1)**  
Preparation of portfolios required for graduation with minor in leadership studies. (Seminar) Pre: enrollment in leadership studies minor.

**497 Special Problems (1-3)**  
Open to qualified seniors who wish to do advanced work primarily consisting of lab or field experiences. Students must obtain written approval from proposed faculty supervisor prior to registration. Pre: senior standing and permission of chairperson. May be repeated for no more than 9 credits. Not for graduate credit. S/U only.

**498 Special Problems (1-3)**  
Open to qualified seniors who wish to do advanced work. Conducted as a seminar or supervised individual project. Students must obtain written approval from proposed faculty supervisor prior to registration. Pre: senior standing and permission of chairperson. May be repeated for no more than 9 credits. Not for graduate credit.

**500 Human Development Seminar (3)**  
Contemporary research issues emerging in the human development literature at five stages of development (infancy, childhood, adolescence, adulthood, and old age), with emphasis placed on continuity and transition across the life span. (Seminar) Pre: 400 or permission of instructor.

**505 Human Sexuality and Counseling (3)**  
Historical, cultural, and developmental issues in human sexuality and counseling. Implications for self and client understanding through personal exploration and desensitization to sensitive topics. (Lec. 3) Pre: graduate standing or permission of instructor.

**506 Rhode Island Early Childhood Institute (1-3)**  
Intensive institute focused on contemporary issues in early childhood education in Rhode Island and the nation. Topics vary, with discussion of theoretical, empirical, and practical issues. (Seminar) Pre: enrollment in Early Childhood Institute program or permission of instructor. May be repeated as topics vary.

**507 Seminar in Early Childhood Education**  
Seminar in trends and model programs in early childhood education. Special attention to substantive evaluation and program design issues for the professional early childhood educator. (Seminar) Pre: student teaching or equivalent classroom experience or permission of instructor.

**511 Seminar in Infancy and Early Childhood (3)**  
Survey and critical examination of research from infancy and early childhood. Implications for diverse

populations and human service settings will be drawn. (Seminar) Pre: graduate standing or permission of instructor.

**512 Seminar in Middle Childhood and Adolescence (3)**  
Survey and critical examination of research from middle childhood through adolescence. Implications for diverse populations and human service settings will be drawn. (Seminar) Pre: 500 or permission of instructor.

**513 Seminar in Adult Development (3)**  
Critical examination of research on development from the onset of legal adulthood to the beginning of late life. Highlights multicultural nature of adult experience in U.S. and implications for social policy. (Seminar) Pre: 500 or permission of instructor.

**514 Seminar in Older Adulthood (3)**  
Review of major theories of aging and application in clinical and policy contexts. Emphasis on current research and practice issues. Interdisciplinary focus on biopsychosocial aspects of growing older. (Seminar) Pre: graduate standing or permission of instructor.

**518 Seminar in Life-Span Financial Issues (3)**  
Survey and critical examination of research on life-span financial issues. Implications for diverse populations and human service settings will be drawn. (Independent Study) Pre: 418 or permission of instructor.

**527 Health Care Policy and the Elderly (3)**  
Present and future problems in policy development to meet health care needs of the elderly. Consideration of historical aspects, demographic change, policy models. (Seminar) Pre: graduate standing.

**530 Advanced Family Studies (3)**  
Intensive study of theories in the family field, integrated with contemporary family issues and family intervention. (Seminar) Pre: graduate standing or permission of the instructor.

**533 Family Policy and Program Evaluation (3)**  
Seminar examining the political, socio-economic, and cultural forces influencing development and implementation of national and local family policies with emphasis on evaluations of child and family programs. (Seminar) Pre: graduate standing or permission of instructor.

**535 Families Under Stress: Coping and Adaptation (3)**  
Theoretical models of family interaction, development, and stress as applied to understanding of family behavior in managing stress or events. Concepts of stress, vulnerability, adaptability, coping, regenerative power, social supports, and related research. (Seminar) Pre: 430 or equivalent course work in family development or family sociology and permission of instructor.

**540 Interdisciplinary Teamwork in Health and Human Services (3)**

Basic principles of interdisciplinary teamwork in health care, human service, and education professions. Practice in promoting effective communication, conflict resolution, and leadership in teams. Focus on social and experiential learning.

**550 Vocational Information and Career Development (1-3)**

Classification and description of jobs and industries; study of occupational trends; needs of special groups entering the labor market; vocational development theories and counseling for long-range career planning. (Lec. 3) Pre: graduate standing or permission of instructor.

**551 Counseling Theory and Techniques (3)**

Theoretical foundation and practice of counseling with diverse adult populations. (Lec. 3) Pre: graduate standing or permission of instructor.

**553 Higher Education Practicum (3)**

Supervised practicum in higher education placements. Emphasis on applied assignments in the initial stages of college student personnel program. (Practicum) Pre: credit or concurrent enrollment in 567, permission of instructor. S/U only.

**559 Gender Issues in Therapy (3)**

Systemic integration of the issues and therapeutic dilemmas growing out of society's changing views of women and men. Emphasis on research, therapist self-awareness, and evaluation of current therapies. (Seminar) Pre: 450 or equivalent and graduate standing or permission of instructor.

**560 Group Procedures and Leadership (3)**

Approaches and processes for conducting a range of group interventions from small group meetings to psychoeducational techniques. A practical and theoretical approach to facilitation skills, team leadership, and group dynamics in higher education and other adult settings. Enrollment is limited. (Lec. 2, Lab. 4) Service learning. Pre: graduate standing or permission of instructor.

**562 (or EDC 596) Organization Development in Human Services and Education (3)**

Conceptual and technical components of organization development (OD) and consultation to various types of organizations, with emphasis on human service arenas. Approaches to the different phases of intervention in planned change efforts using theoretical frameworks, case, and client applications. (Lec. 2, Lab. 4) Service learning. Pre: graduate standing or permission of instructor.

**563 Marital and Family Therapy I (3)**

Major theoretical perspectives, including system theory as related to therapy. Communication and relationship skills, negotiation and behavioral contracting, treating specific relationship problems, therapy evaluation. (Seminar) Pre: permission of instructor.

**564 Marital and Family Therapy II (3)**

Major contemporary theories of family therapy and the development of family therapy as a unique intervention strategy; special consideration of issues and problems commonly confronted in conducting family therapy. (Seminar) Pre: permission of instructor.

**565 Family Therapy Practicum (3)**

Supervised clinical experience in marriage and family therapy. Case materials will be presented by students, and taped segments of actual counseling sessions will be reviewed. (Lec. 3) Pre: admission to MFT program or permission of instructor. May be repeated for a maximum of 18 credits.

**566 Theoretical and Clinical Problems (3)**

Examination of major ongoing and emerging theoretical issues in family therapy. The implications of these problems in clinical practice with families. (Lec. 3) Pre: 564 and graduate standing.

**567 Principles and Practices of College Student Personnel (3)**

Survey of the historical, philosophical, sociological, and cultural influences on college student personnel work as a profession and exploration of selected functional areas within student affairs. (Lec. 3) Pre: graduate standing in CSP and permission of instructor.

**568 College Student Development and Learning (3)**

Examination of human development and learning of students in higher education. Emphasis on psychosocial, intellectual, and moral development in a sociohistorical context. (Lec. 3) Pre: 567.

**569 Assessment in Family Therapy (3)**

Administration and interpretation of assessment instruments for treatment, planning, and evaluation. Ethical, legal, and theoretical issues related to family systems assessment are discussed. (Seminar) Pre: graduate standing or permission of instructor.

**570 Research in Human Development and Family Studies (3)**

Historical, philosophical, and procedural foundations of scientific inquiries into individuals and families. Explores the various ways to acquire information about human development and family relationships. (Lec. 3) Pre: graduate standing or permission of instructor.

**572 Administrative Practices in Human Development and Family Studies (1)**

Introduction to administrative practices affecting entry level professionals in HDF. (Lec. 3) Pre: permission of instructor.

**573 Legal Issues in Higher Education (1-3)**

An overview of the effect of federal and state legal systems on university administration and service delivery. Reviews authorities and agencies, major court decisions, and the application of substantive and

procedural law principles. (Lec. 1-3) Pre: graduate standing or permission of instructor.

**574 Environmental Theory and Assessment in Higher Education (3)**

Overview of selected person-environmental interaction theories and assessment frameworks applicable in higher education settings. Emphasis on campus ecology, cultural, perceptual, human aggregate, physical/architectural, and behavior setting approaches. (Seminar) Pre: 568 and 570.

**575 Cultural Competence in Human Services (1)**

Exploration of skills needed to enhance a diverse work environment and other human service settings. (Seminar) Pre: graduate standing or permission of instructor.

**576 Diversity in Higher Education (2)**

Survey of the historical and current demographical profile of students in higher education. Emphasis on implications for programs, policies, and leadership. (Lec. 2) Pre: graduate standing in College Student Personnel or permission of instructor.

**577 Seminar: Topics in Higher Education (1-3)**

Recent developments and current issues in higher education. May be repeated for a maximum of 6 credits. (Seminar)

**578 Ethical, Legal, and Professional Concerns in Family Therapy (3)**

Ethical, legal, and professional issues encountered by family therapists in the delivery of services. These aspects of therapy practice along with systemic theory are cornerstones of competent practice. (Seminar) Pre: 563 and 565, 530 and 535, and concurrent enrollment in 583. Pre: permission of instructor.

**580 Professional Seminar (1-3)**

Emphasizes initial implementation phases of master's research requirement as well as legal, ethical, and professional issues. (Seminar) Pre: advanced standing and permission of instructor.

**581 Professional Seminar (1-3)**

Emphasizes research applications, completion of master's research requirement, and making a transition to a professional position. (Seminar) Pre: concurrent enrollment in 584 and permission of instructor.

**583, 584 Master's Internship (3 or 6 each)**

Supervised field experience in various settings. Culminating experience integrates program theory and skills. (Practicum) Service learning. Pre: advanced standing and permission of instructor. College Student Personnel students must enroll concurrently in 580, 583 (fall) and 581, 584 (spring). S/U credit.

**595 Master's Project: Action Research (1-6)**

Number of credits is determined each semester in consultation with the major professor. Minimum of 6 credits is required of students who have chosen the action-thesis option. (Independent Study) S/U credit.

**597, 598 Advanced Study (1-3 each)**

Survey of important research contributions significant to the understanding of human development and relationships. (Independent Study)

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. Minimum of 6 credits is required of students who have chosen the thesis option. (Independent Study) S/U credit.

**Human Science and Services (HSS)**

*Dean: Professor McKinney*

**120 Introduction to Human Science and Services (3)**

Survey of contemporary human service needs and delivery systems with emphasis on historical development, values, ethics, agency structures and functions, and consumers. (Lec. 3) Pre: any one of the following—ECN 100, PSC 113, SOC 100, PSY 113, HDF 200 or 201.

**130 Introduction to Hunger Studies (3)**

Survey exploring the nature and extent of hunger in the United States, food and dietetics, public policy, food production and distribution, and programs to provide food to hungry people. (Lec. 2, Lab. 2) (S) [D]

**140 Ways of Knowing in Human Science and Services I (1)**

Examination of the human service field; exploration and identification of educational and career goals. (Seminar) Service learning. Pre: 120 or concurrent registration.

**141 Ways of Knowing in Human Science and Services II (2)**

Exploration and identification of education and career goals; documentation of learning experiences; development of program of study. (Seminar) Service learning. Pre: 120 or concurrent registration, 140.

**170 Field Experience in Human Science and Services I (2-6)**

Didactic and experiential learning in student-selected settings. Emphasis on achievement of pre-established learning goals leading to selected competencies. Goals established by the students, instructor, and site supervisor. (Practicum) Pre: admission to the human science and services program and permission of instructor.

**270 Field Experience in Human Science and Services II (2-6)**

Didactic and experiential learning in student-selected settings. Emphasis on achievement of pre-established learning goals leading to selected competencies. Goals established by the students, instructor, and site supervisor. (Practicum) Pre: admission to the

human science and services program and permission of instructor.

**320 Introduction to Research in Human Science and Services (3)**

Consideration of the philosophy, principles, methods, and materials involved in research in the human sciences. Emphasis also on research reading, writing, and presentation skills. (Lec. 3)

**350 Foundations of Public Policy in Human Services (3)**

The analysis of recent public policy proposals in various areas of human services through differing ideological assumptions of traditional and contemporary views of helping professionals. (Lec. 3)

**370 Field Experience in Human Science and Services (6-12)**

Supervised field experience in human service agencies. Prior to placement, the student must develop a learning contract in consultation with the agency and his or her faculty advisor. (Practicum) Pre: junior standing in human science and services and permission of instructor. S/U only.

**399 Senior Project in Human Science and Services (3)**

Supervised project conducting research or creating a product for a human services agency. (Independent Study) Pre: senior standing in human science and services.

**470 Fourth-Year Field Experience in Human Science and Services (2-6)**

Didactic and experiential learning in student-selected settings. Emphasis on achievement of pre-established learning goals leading to selected competencies. Goals established by the students, instructor, and site supervisor. (Practicum) Pre: admission to the human science and services program and permission of instructor. Not for graduate credit.

**480 Senior Seminar in Human Science and Services (3)**

Interdisciplinary capstone seminar, with content developed to fit learning goals and programs of study of the students. Portfolio development and assessment as culminating experience. (Seminar) Pre: senior standing in human science and services and permission of instructor. Not for graduate credit.

**491, 492 Special Problems (1-3 each)**

Advanced work in the human services under the supervision of a faculty member. (Independent Study) Pre: permission of instructor and the Division of Interdisciplinary Studies. Not for graduate credit in human development and family studies.

**530 Multidisciplinary Health Seminars for the Elderly (3)**

Field experience for students in various health disciplines. Development of assessment techniques, curricular materials, and team delivery of health

seminars to the elderly at community sites. (Seminar) Service learning. Pre: graduate standing or permission of instructor.

**590 Seminar in Human Science (3)**

Investigation of human science as lived experience, reflective inquiry, and reflective practice. Development and presentation of individual projects embodying these characteristics of human science. (Seminar)

**Industrial and Systems Engineering (IME)**

*Chairperson: Professor Wang*

**220 Introduction to Industrial Engineering (3)**

Role of industrial engineers, productivity and quality in production systems, optimization, work measurement, micromotion study and standard data, job evaluation, human factors and ergonomics. (Lec. 3) Pre: MTH 141.

**240 Manufacturing Processes (3)**

Introduction to manufacturing processes. Processes, measurement, accuracy, and precision as they relate to deformation, structure, and material properties. (Lec. 3) Pre: CHM 101 and PHY 204.

**241 Laboratory for Manufacturing Processes (1)**

Laboratory demonstrations and experiments in machining, casting, metrology, and rapid prototyping. Plant visits and lab tours. (Lab. 3) Pre: credit or concurrent enrollment in 240.

**325 Computer Tools for Engineers (3)**

Visual basic programming, including VBA and other computer tools and applications used in engineering. (Lec. 3) Pre: MTH 141.

**340 (or CHE 340) Materials Processing and Metallurgy I (3)**

An introduction to the fundamentals of materials processing and the relationship to material properties. Manufacturing properties of materials. Characteristics and basic analysis of forming processes, material removal processes and joining processes. (Lec. 3) Pre: CHE 333 or 437 and CVE 220.

**391, 392 Special Problems in Industrial Engineering (1-3 each)**

Independent study and seminar work under close faculty supervision. Discussion of advanced topics in preparation for graduate work. (Independent Study) Pre: junior standing and permission of instructor.

**404 Engineering Economy and Project Planning (3)**

Effects of economics on engineering decisions in design, selection, and product or project proposals, project planning, resource allocation, and scheduling using computer-based tools. (Lec. 3) Not for graduate credit in industrial and systems engineering.

**411 Probability and Statistics for Engineers (3)**

Introduction to probability and statistics in engineering applications including data analysis, probability theory, random variables, probability distributions, sampling and sampling distributions, and statistical inference. (Lec. 3) Pre: MTH 243 or permission of instructor.

**412 Statistical Methods and Quality Control (3)**

Study of statistical methods and quality control in engineering applications including sampling and sampling distributions, statistical inference, quality improvement tools, control charts, process capability, design of experiments, and acceptance sampling. (Lec. 3) Pre: 411 or STA 409 or permission of instructor.

**432 Operations Research: Deterministic Systems (3)**

Introduction to major areas of operations research and their application to systems analysis. Linear programming, transportation and transshipment models, elementary network analysis, integer programming, and related topics. (Lec. 3) Pre: MTH 243, 362 or equivalent.

**433 Operations Research: Stochastic Systems (3)**

Markov chains, dynamic programming, queuing theory, simulation, forecasting, game theory simple stochastic models, and their relation to selected problems. (Lec. 3) Pre: 411 and MTH 362 or permission of instructor.

**443 Machining and Machine Tools (3)**

Machine tool motions, power requirements, and machining times. Mechanics and economics of metal machining. Introduction to numerical control and computer-aided programming of CNC machine tools. (Lec. 3) Pre: CVE 220 and IME 240 or 340.

**444 Assembly and Handling Automation (3)**

Types and economics of automatic assembly systems. Analyses of automatic feeding and orienting techniques for small parts. Application of robots in assembly. (Lec. 3) Pre: MCE 263 and IME 240 or 340.

**446 (or MCE 446) Metal Deformation Processes (3)**

Study of the characteristics of metal flow under different loading conditions. Theories, capabilities, and limitations of a wide range of deformation processes applied to industrial metalworking. (Lec. 3) Pre: 240 or 340, CVE 220, and CHE 333.

**449 (or MCE 449) Product Design for Manufacture (3)**

Techniques for analyzing product structures for ease of assembly and manufacture. Manual, robot, and high-speed mechanized assembly systems considered for mechanical and electronic products. Covers choice of material and processes in early design. (Lec. 3) Pre: 240 or 340, 443, or permission of instructor.

**451 Industrial Engineering Design I (3)**

Stochastic and deterministic models of production and inventory systems. Aggregate planning, push and pull production control systems, lean production systems, and scheduling. (Lec. 3) Pre: 432 and concurrent enrollment in 433 or permission of instructor.

**452 Industrial Engineering Design II (3)**

A team project approach to industrial engineering design including assembly lines, transfer lines, scheduling, cellular manufacturing, flexible manufacturing facilities, operation and material flow design; facilities design and operation; production systems design. (Lec. 3) Pre: 451 or permission of instructor.

**460 Product Design for Environment (3)**

Principles and practices of designing more environmentally beneficial products. Environmental effects. Life cycle analysis, recycling and remanufacturing. Design for disassembly and environment. Group projects on product and process design using LCA and DFE analysis tools. (Lec. 3) Pre: 240 or 340, CHE 333 or 437.

**491, 492 Special Problems (1–6 each)**

Advanced work under the supervision of a member of the faculty and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 12 credits.

**500 Network Application in Industrial Engineering (3)**

Industrial systems problems that can be formulated in terms of network. Critical path method/PERT applications, maximum flow in network, network analysis and synthesis, max-flow and min-cost network. GERT stochastic network modeling and applications. (Lec. 3) Pre: 432 or permission of instructor. In alternate years.

**513 (or STA 513) Quality Engineering (3)**

Topics in statistical quality control systems. Single, multiple, and sequential sampling. Design and analysis of a wide variety of statistical control systems used in conjunction with discrete and continuous data, for several kinds of data emission. (Lec. 3) Pre: 412 or equivalent.

**525 (or CSC 525 or ELE 515) Systems Simulation (3)**

Simulation of random processes and systems. Continuous and discrete simulation models. Data structures and algorithms for simulation. Generation of random variates, design of simulation experiments for optimization and validation of models and results. Selected engineering applications. (Lec. 3) Pre: CSC 212 or IME 325, IME 433 or ELE 509, or permission of the instructor.

**533 Advanced Statistical Methods for Research and Industry (3)**

Describing and analyzing data, design of experiments, analysis of variance, regression analysis, and

applications in industry and applied science research. (Lec. 3) Pre: 411 or permission of instructor.

**540 Production Control and Inventory Systems (3)**

Theory and practice of industrial production control and inventory systems. A broad spectrum of mathematical models for static, dynamic, perpetual, and periodic inventory systems as they affect and relate to production. (Lec. 3) Pre: 432 or permission of instructor.

**541 Advanced Materials Processing (3)**

Engineering analyses in the processing of materials. Rapid manufacturing fundamentals. Nontraditional manufacturing techniques. Dynamic coupling, tool-work-piece interaction, energy and thermal analysis; mechanics of material removal and displacements. (Lec. 3) Pre: 240 or 340, or permission of instructor.

**542 Introduction to Computer-Aided Manufacturing (3)**

Use of computers in manufacturing. Solid modeling principles and applications. Numerical and adaptive control. CNC programming. Introduction to rapid manufacturing. (Lec. 3) Pre: 240 or permission of instructor.

**543 Fundamentals of Machining (3)**

Fundamental treatment of the mechanics and economics of metal machining and grinding. Includes an introduction to numerical control and computer-aided programming of CNC machine tools. (Lec. 3) Pre: CVE 220 and IME 240 or 340 or permission of instructor. Not for graduate credit for students with credit in 443.

**544 Automatic Assembly (3)**

Types and economics of automatic assembly systems. Analysis of automatic feeding and orienting techniques for small parts. Application of robots in assembly. Economics of assembly systems for printed circuit boards. (Lec. 3) Pre: 240 or permission of instructor. Not for graduate credit for students with credit in 444.

**545 Manufacturing Systems (3)**

Problems in system analysis and design as related to manufacturing. Quantitative models and simulation methods for manufacturing planning, control, scheduling, flexible manufacturing or highly automated manufacturing systems. (Lec. 3) Pre: 432 or permission of instructor.

**546 Advanced Metal Deformation Processes (3)**

Theory of metal flow under different loading conditions. Prediction of metal forming process capabilities. Advanced topics include effects of anisotropy and mechanics of powder forming. (Lec. 3) Pre: 340 or permission of instructor. Not for graduate credit for students with credit in 446.

**549 (or MCE 549) Advanced Product Design for Manufacture (3)**

Techniques for analyzing product structures for ease of assembly and manufacture. Considers mechanical and electronic products and choice of materials and processes. A design project and term paper are required. (Lec. 3) Pre: 240 or 340 or permission of instructor. Not for graduate credit for students with credit in 449.

**550 Design for Productibility (3)**

Project work on product development, collaboration with industry, and submission of design project report. Concentration on effect of design decisions on manufacturing efficiency and cost. (Independent Study) Pre: 449 or 549 or permission of instructor.

**552 Lean Systems (3)**

Advanced study of manufacturing system design including application of lean principles to service industries. Specific topics include waste elimination, reduction of cycle and set-up times, reconfigurable systems, quality and performance analysis. (Lec. 3) Pre: 451 or permission of instructor.

**555 Deterministic Systems Optimization (3)**

Linear, nonlinear, and integer formulations and solutions. Sensitivity analysis and pricing problems; degeneracy and duality; decomposition methods for large-scale systems; use of mathematical programming languages and applications. Pre: 451 or permission of instructor. In alternate years.

**591, 592 Special Problems (1–6 each)**

Advanced work under supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 12 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**634 Design and Analysis of Industrial Experiments (3)**

Advanced topics in the design and analysis of experiments: factorial designs, blocking and confounding in factorial designs, fractional factorial designs, response surface methods and designs, nested and split-plot designs, other design and analysis topics. (Lec. 3) Pre: 533 or permission of instructor.

**660 Nonlinear Optimization (3)**

Methods of optimization: indirect, direct elimination, climbing. Geometric programming. Problems and other topics in applied optimization. (Lec. 3) Pre: CSC 550 or permission of instructor.

**691, 692 Advanced Special Problems in Industrial Engineering (1–6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements

of the student. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 12 credits.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U only.

## Internships and Experiential Education (ITR)

**301, 302 Field Experience I, II (3-12 each)**

Field experience gained at placement site through participation in the ITR program. The experience will be defined by a job description and learning contract arranged by the ITR director between the student intern, the intern's faculty advisor, and the relevant agency supervisor. (Practicum) Pre: junior or senior standing, a minimum quality point average of 2.50, participation in the ITR program, and permission of faculty advisor. May be repeated for a maximum of 24 credits. S/U credit.

**303, 304 Colloquium I, II (3 each)**

Seminar format. Discussions of issues and problems raised by internship experiences in public service agencies. (Seminar/Online) Pre: concurrent enrollment in 301 for 303, and in 302 for 304. Required for and open only to students enrolled in the ITR program.

## Italian (ITL)

*Section Head:* Associate Professor Sama

**101 Beginning Italian I (3)**

Elements of the language, pronunciation, grammar, inductive reading; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Italian is required. Will not count toward the language requirement if the student has studied Italian for more than one year within the last six years. (FC) [D]

**102 Beginning Italian II (3)**

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

**103 Intermediate Italian I (3)**

Development of facility in reading texts of moderate difficulty, supplemented by further work in grammar, conversation, and composition. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

**104 Intermediate Italian II (3)**

Continuation of 103. Students enrolling in this course should have taken 103 or equivalent. (Lec. 3) (FC) [D]

**105 Basic Conversation (1)**

Practice in basic Italian conversation skills. (Lec. 1) Pre: credit or concurrent enrollment in 103 or 104. May be repeated once for maximum of 2 credits.

**111 Accelerated Elementary Italian (6)**

Accelerated Elementary Italian equivalent to 101-102. Develops basic communication skills in Italian. Explores the products, practices, and perspectives of Italian culture. (Lec. 6) (FC) [D]

**205, 206 Conversation and Composition (3 each)**

Intensive course in conversation and composition. Promotes facility in speaking and understanding idiomatic Italian. Students enrolling in 205 should have taken 104 or equivalent. (Lec. 3) (FC) [D]

**301, 302 Civilization of Italy (3 each)**

The most important aspects of Italian civilization. 301: From the Middle Ages to the end of the Renaissance. 302: From the 17th century to the present. (Lec. 3) Pre: 205 or 206 or permission of chairperson.

**305 Advanced Conversation and Composition (3)**

Intensive practice in spoken and written Italian. (Lec. 3) Pre: 205 or 206 or permission of chairperson.

**309 Techniques of Translation (3)**

Principles and techniques of translating written Italian into English and vice versa. Text materials of different types used in practical work: scientific, journalistic, business, and literary language. (Lec. 3) Pre: 205 or 206 or permission of chairperson.

**315 Italian Cinema (3)**

Representative Italian films and their directors through viewing and discussions of films, lectures, and readings. Course taught in English. (Lec. 3) Students counting the course for a major or minor in Italian are required to do written work in Italian and must have credit for 205 or 206 or permission of instructor. May be repeated with different topics for a maximum of 9 credits.

**325, 326 Introduction to Italian Literature (3 each)**

Appreciation of literature. Representative texts of Italian narrative, drama, and lyric poetry. Elements of the methods of criticism. (Lec. 3) Pre: 205 or 206 or permission of chairperson.

**391, 392 Masterpieces of Italian Literature (3 each)**

Reading in English translation of selected Italian authors of greatest significance. 391: Medieval and Renaissance. 392: Post-Renaissance to 20th century. (Lec. 3) Not for major credit in Italian.

**395 Dante's *Divine Comedy* (3)**

Reading in English translation of Dante's chief work. (Lec. 3) Not for major credit in Italian.

**408 The Italian Language (3)**

Advanced study of the structure of the Italian language. Analysis of linguistic elements as found in representative authors from the 13th to 20th century. (Lec. 3) Pre: one 300-level course or permission of instructor.

**455 Selected Italian Authors (3)**

Works of one or more major authors of Italian literature. Specific author(s) are designated the semester before the course is given. (Lec. 3) Pre: one 300-level course or permission of instructor. May be repeated for a maximum of 12 credits.

**465 Topics in Italian Literature (3)**

Special topics or themes in Italian literature not treated or emphasized in other courses. (Lec. 3) Pre: one 300-level course or permission of instructor. May be repeated with change in topic for a maximum of 9 credits.

**480 Business Italian (3)**

Study of concepts and terminology relating to the Italian business world. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in at least one 300-level Italian course, or permission of instructor.

**481 The Works of Dante Alighieri (3)**

Dante's works with special attention given to analysis and interpretation of the *Divine Comedy* from the social, religious, philosophical, and political viewpoints of the Middle Ages. (Lec. 3) Pre: one 300-level course or permission of instructor.

**497, 498 Directed Study (3 each)**

Designed particularly for the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by a faculty member and approval of chairperson.

## Japanese (JPN)

*Chairperson:* Professor Morello

**101 Beginning Japanese I (3)**

Fundamentals of grammar and pronunciation, exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Japanese is required. Will not count toward the language requirement if the student has studied Japanese for more than one year within the last six years. (FC) [D]

**102 Beginning Japanese II (3)**

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

**103 Intermediate Japanese I (3)**

Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

**104 Intermediate Japanese II (3)**

Continuation of 103. Students enrolling in this course should have taken 103 or equivalent. (Lec. 3) (FC) [D]

**Journalism (JOR)**

Chairperson: Professor Levin

**110 Introduction to the Mass Media (3)**

Surveys newspapers, magazines, radio, movies, television, advertising, and emerging technologies. Examines economic and news functions of each. Considers First Amendment, legal and ethical problems, restrictions, and social consequences of media. (Lec. 3) Recommended for nonmajors. Not for major credit in journalism. (L) or (S) [D]

**115 Foundations of American Journalism (3)**

Introduction to basic theories and principles of American journalism, and some of the major issues journalists confront. Examines news media audiences, effects, freedom, and responsibility. (Lec. 3) For journalism majors only.

**210 History of American Journalism (3)**

Development of American newspapers, magazines, and broadcast industry with analysis of the ideas that have changed American journalism. Exploration of the journalist's experience at periods in American history; the effects of economic and social changes on the press. (Lec. 3) Pre: 110 or 115 or permission of instructor. In alternate years. Next offered fall 2007.

**211 History of Broadcasting (3)**

Survey of broadcasting. Examines its pioneers and the impact of significant historical events as covered by radio and television. Considers the origins of modern news shows, talk-show formats, magazine broadcasts, and quiz shows. (Lec. 3) Pre: 110 or 115. In alternate years. Next offered fall 2008.

**215 Free Speech and American Society (3)**

Legal and social parameters of freedom of speech in the United States. The legal and social history of freedom of speech will be examined and applied to discussions of recent free-speech controversies. (Lec. 3) Pre: 110 or 115.

**220 Media Writing (3)**

An introduction to writing for newspapers, magazines, broadcasting, and public relations. Includes consideration of objectivity, information gathering, language use, clarity and style, legal and ethical concerns. (Lec. 2, Lab. 2) Pre: WRT course with a grade of B or better.

**230 Introduction to Radio and Television News (3)**

Beginning course in the principles and techniques of radio and television news gathering and writing. Stress is placed on copy formats, broadcast style, and basic production techniques. Frequent out-of-class

and off-campus assignments. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better.

**310 Mass Media Law (3)**

Role of government and the law in the communication of news, including basic laws affecting freedom of the press, journalists' privileges and responsibilities, privacy, broadcasting, and advertising. Case studies. (Lec. 3) Pre: junior standing and 110 or 115 and one 300-level journalism skills course or permission of instructor.

**311 Media Criticism in America (3)**

Examines news media performance in the United States by studying the works of media critics, both historical and contemporary. Practice in media monitoring and writing media criticism. (Lec. 3) Pre: 110 or 115 or permission of instructor.

**313 Other Voices: Alternative Media in the United States (3)**

Critical analysis of nontraditional media in the United States, including black, religious, feminist, gay and lesbian press, as well as broadcast stations operated by and for minority groups. (Lec. 3) Pre: 110 or 115. In alternate years. Next offered spring 2008.

**320 Public Affairs Reporting and Writing (3)**

Practice in gathering and writing news of public affairs, including local and state government, courts, law enforcement. Introduces public records, alternatives to straight news story, interviewing techniques, rewriting. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better.

**321 Magazine Article and Feature Writing (3)**

Planning, researching, and writing articles and feature stories for magazines and newspapers. Discussion of markets, freelance and job opportunities. Articles written and submitted to publications. (Seminar) Pre: 220 with a grade of C or better, or permission of instructor.

**330 Television News (3)**

Intermediate course in news gathering and writing for television. Emphasizes reporting, writing, anchoring, and producing. Group work leads to production of a half-hour studio newscast. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 230 with a grade of C or better.

**331 Electronic News Gathering (3)**

Skill development in the visual technology of television news. Techniques of single-camera field production are stressed. Introduction to fundamentals of videotape editing; practice in ENG photography and editing. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 230 with a grade of C or better.

**340 Public Relations**

See Public Relations 340.

**341 Editing for Publication I (3)**

An introduction to editing for the print media, including newspapers, magazines, and public relations. Focuses on taking work written by others and preparing it for publication. Includes consideration of legal and ethical issues. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better.

**345 Journalism Internship (3 or 6)**

Supervised experience in (a) reporting and writing; (b) editing; (c) radio news; (d) television news; (e) public relations. Requires a minimum of 120 hours (3 credits) or 240 hours (6 credits). Weekly one-hour class meeting. Maximum of 6 credits allowed toward graduation. (Practicum) Pre: journalism majors and minors and public relations minors only. Prerequisite courses depend on internship. Permission of instructor and application required.

**410 Mass Media Issues (3)**

Critical analysis of current issues affecting journalists and society in general, based on readings, videotapes, case studies, and discussion. Emphasis on ethics and decision making. (Lec. 3) Pre: 110 or 115 and senior standing or permission of instructor. Not for graduate credit.

**415 Perspectives on Reporting (3)**

Critical assessment of reporting through the reading and analysis of various types of reporting, including literary journalism, muckraking, investigative reporting, and New Journalism. (Seminar) Pre: 110 or 115 and junior standing. Not for graduate credit.

**420 Advanced Reporting and Writing (3)**

Planning, developing, and writing complex news stories for publication. Emphasizes story-idea generation, information gathering from multiple sources, using public records and documents, and advanced interviewing techniques. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: junior standing and 320 with a grade of C or better. Not for graduate credit.

**430 Advanced Television News (3)**

Practical experience in longer, more specialized news formats. Students report, write, videotape in-depth television news pieces. (Lec. 3)

**440 Independent Study (1-3)**

Individual reading programs, research, or project in journalism or mass media. (Independent Study) Pre: junior standing and submission to chairperson of proposal signed by supervising faculty member. Not for graduate credit.

**441 Public Relations Practices**

See Public Relations 441.

**442 Editing for Publication II (3)**

An introduction to designing and producing for the print media, including newspapers, magazines, and newsletters. Extensive use of computers and desktop-publishing technology. Includes consideration of

legal and ethical issues. (Lec. 2, Lab. 2) Pre: 341 with a grade of C or better. Not for graduate credit.

**445 Special Topics in Journalism (3)**

Subject, course content, and years offered will vary according to expertise and availability of instructors. (Independent Study) Pre: permission of instructor. May be repeated for credit with different topic. Not for graduate credit.

**Kinesiology (KIN)**

*Chairperson:* Professor Riebe

**105 Beginner Elective Activity I: Individual and Dual Sports (1)**

Beginning level of instruction for students with little or no previous experience in the activities offered. Select appropriate letter for activity desired; e.g., 105B Beginning Badminton. (Studio 3)

B Badminton	G Golf
D Bowling	I Sailing
E Canoeing	L Aerobics
W Aerobic Fitness and Muscular Fitness and Muscular Endurance	

**115 Team Sports (0.5)**

Emphasis on analysis of skills, strategies, class organization, and teaching techniques. Select appropriate letter for activity desired. (Studio 3) Open to kinesiology majors only.

A Basketball	E Lacrosse
B Field Hockey	F Soccer
C Flag Football	G Softball
D Recreational Sports	H Volleyball

**120 Weight Training and Physical Conditioning (1)**

Principles of weight training and conditioning with emphasis on constructing individual and group exercise programs. (Studio 3) Open to kinesiology majors only.

**123 Foundations of Health (3)**

Development of attitudes and practices that lead to more healthful living. Personal and community health problems studied. (Lec. 3) (S) [D]

**130 Beginning Swimming (1)**

Beginning level of instruction for students with little or no previous experience. (Studio 3)

**172 Basic First Aid and CPR (0.5)**

Instruction and practice in basic level of injury prevention and first aid and CPR procedures. Students successfully meeting requirements will receive Basic First Aid and CPR certifications. (Lec. /Lab. 1)

**205 Intermediate Elective, Activity I (1)**

Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 105. (Studio 3)

**215 Individual Sports (0.5)**

Emphasis on analysis of skills, strategies, class organization, and teaching techniques. Select appropriate letter for activity desired. (Studio 3) Open to kinesiology majors only.

B Badminton	F Tennis
C Bowling	H Track and Field
E Golf	

**217 Field Experience in Physical Education, Health, and Recreation (1)**

Students assist in one of the following: community agency, public or private school program, summer camp or recreation program, special education program. (Practicum) Pre: permission of chairperson. May be repeated but with different agency. S/U credit.

**222 Basic Movements and Gymnastics (1)**

Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills of apparatus and tumbling with special emphasis on teaching and safety procedures. (Studio 3) Open to kinesiology majors only.

**230 Intermediate Swimming (1)**

Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in swimming. (Studio 3)

**243 Prevention and Care of Athletic Injuries and First Aid (3)**

Conditioning, use of physiotherapy equipment, massaging, taping and bandaging technique. Latest American Red Cross procedures with the opportunity to receive standard certification. (Lec. 2, Lab. 2) Open to physical education teaching majors only.

**263 Principles of Athletic Coaching (3)**

Principles of exercise physiology, leadership, and psychology applied to athletic coaching. Includes materials on administration of athletics. (Lec. 3)

**270 Introduction to Teaching Physical Education (3)**

Foundations of teaching physical education. Application of current theories of effective practices of teaching physical education in the elementary and secondary schools. (Lec. 3)

**272 Basic First Aid and CPR Instructor (1)**

Instruction and practice in performance and teaching the basic level of injury prevention and first aid and CPR procedures. Students successfully meeting requirements will receive First Aid and CPR Instructor certifications. (Lec. /Lab. 2)

**275 Introduction to Exercise Science (3)**

Principles of exercise, components of health-related fitness, weight control, and stress management. Basic exercise prescription for cardiorespiratory endurance, muscular strength, and endurance and flexibility. (Lec. 3)

**278 Physical Activity, Cultural Diversity, and Society (3)**

Introduction to the multiple ways in which issues of cultural diversity shape physical activity in American society. (Lec. 3)

**304 Methods of Teaching Physical Education in Elementary Schools (3)**

Instruction in contemporary techniques used in a program of physical education for elementary school children. Types of activities found in basic programs and in planned progressions for various age groups. (Lec. 2, Lab. 2) Pre: concurrent enrollment in 305, admission to the teacher education program by the start of semester.

**305 Supervised Experience—Physical Education in the Elementary School (1)**

Students participate in supervised experience laboratory for methods learned in 304. (Practicum) Pre: concurrent enrollment in 304, admission to the teacher education program by the start of semester.

**310 Principles of Human Motor Development (3)**

Overview of the principles of motor development for the physical education teacher. Examines human motor development across the life span with emphasis on assessment and program development. Includes basic principles of motor learning. (Lec. 3) Pre: admission to the teacher education program and PSY 232 or HDF 200; or permission of chairperson.

**314 Methods of Teaching Physical Education in Secondary Schools (3)**

Instruction in contemporary techniques used in a program of physical education for secondary school children. Types of activities found in basic programs and in planned progressions for various age groups. (Lec. 2, Lab. 2) Pre: 304, 305, concurrent enrollment in 315, admission to the teacher education program.

**315 Supervised Experience—Physical Education in the Secondary School (1)**

Students participate in supervised experience laboratory for methods learned in 314. (Practicum) Pre: 304, 305, concurrent enrollment in 314, admission to the teacher education program.

**322 Outdoor Leisure Pursuits (1)**

Principal philosophical foundations of adventure theory and wilderness leadership are examined while the student learns to teach outdoor leisure activities. Concepts of judgment, decision making, leadership, and environmentally sensitive practices are introduced. (Lec. 1) Pre: 130 or 230, physical education teaching majors only; or permission of chairperson.

**324 Rhythms and Dance (3)**

Instruction in the fundamental skills of folk, square, ballroom, and social dances, emphasizing personal skill acquisition and the skills necessary for teaching dances in the public/private school physical education environment. (Lec. 2, Lab. 2) Pre: admission

to the teacher education program by the start of semester.

**325 Physical Fitness Appraisal and Guidance (3)**  
Theory and application of physical fitness assessments with focus on appropriate test selection and performance. Emphasis on practical skills of test administration. Preparation for ACSM-HFI certification. (Lec. 2, Lab. 2) Pre: 275.

**330 Lifeguard Training (1)**  
(Studio 3)

**334 (or BIO 334) Physiology of Exercise (3)**  
Applied human physiology, with applications to work, health, physical education, and athletic sports. Particular attention to adjustments of the circulatory and respiratory systems during physical activity. Application of latest technology in the field of fitness and health. (Lec. 3) Pre: BIO 201 or 242, junior or senior standing; or permission of instructor.

**335 (or BIO 335) Physiology of Exercise Laboratory (1)**

Student participation in laboratory sessions designed to understand the physiology of exercise relating to body composition, EKG, pulmonary, and metabolic functions. (Lab. 3) Pre: 201 or 242.

**340 Water Safety Instructor (2)**  
(Lec. 1, Lab. 2)

**341 Techniques of Officiating I (3)**

Presentation of current methods and techniques of officiating selected fall team sports. Provides necessary training and practical experience for students. (Lec. 2, Lab. 2)

**342 Techniques of Officiating II (3)**

Presentation of current methods and techniques of officiating selected spring team sports. Provides necessary training and practical experience for students. (Lec. 2, Lab. 2)

**346 Skin and Scuba Diving, Beginners (2)**

Emphasis on basic physical principles, hazards, selection of equipment, and techniques. Note: This course requires a physical examination at the student's expense administered by a physician with special expertise in this area. Please contact Health Services for a reference to an approved physician prior to July 1 for enrollment in the fall semester and November 1 for enrollment in the spring semester. (Lec. 1, Lab. 2) Pre: permission of instructor.

**347 Skin and Scuba Diving, Advanced (2)**

Emphasis on the skill needed for advanced scuba activities as related to deep dives, salvage. Note: This course requires a physical examination at the student's expense administered by a physician with special expertise in this area. Please contact Health Services for a reference to an approved physician prior to July 1 for enrollment in the fall semester and November 1 for enrollment in the spring semester. (Lec. 1, Lab. 2) Pre: 346.

**355 Coaching of Soccer (3)**

Technical, tactical, physical, and psychological elements of coaching and playing soccer. Includes planning of training schedules and analysis of individual and team play. Successful completion results in USSF certification. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor.

**362 Coaching of Track and Field (2)**

Theory, techniques, and practice in coaching of track and field. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor.

**364 Coaching of Baseball (2)**

Theory, techniques, and practice in coaching baseball. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor.

**369 Measurement and Evaluation in Kinesiology (3)**

Students learn statistical basis for descriptive analyses and hypothesis testing in kinesiology. Students also learn to select, administer, and create reliable and valid tests in exercise, sport, fitness, health, and physical education. (Lec. 3) Pre: completion of math general education requirement; completion of at least 30 credit hours. Open to kinesiology majors only.

**370 Kinesiology (3)**

The study of human movement based on anatomical, physiological, and mechanical principles. Emphasis on application of these principles to fundamental movement and physical education activity. (Lec. 3) Pre: BIO 121 and 242. For majors only.

**382 Psycho-Social Aspects of Physical Education and Sport (3)**

The scientific study of the behavior of individuals and groups within sport and physical activity. (Lec. 3) Pre: PSY 113, or permission of instructor.

**384 Coaching of Football (2)**

Theory, techniques, and practice in coaching football. (Lec. 2) Pre: 263 or permission of instructor.

**386 Coaching of Basketball (2)**

Theory, techniques, and practice in coaching basketball. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor.

**391 Directed Study (1-3)**

Development of an approved project supervised by a member of the department faculty. (Independent Study) Pre: junior standing and permission of chairperson and instructor.

**410 Adapted Physical Education (3)**

Planning and evaluation of physical education programs for individuals with special needs. Includes issues regarding disability laws and various mental, psychological, and physical conditions. (Lec. 2, Lab. 2) Pre: credit or concurrent enrollment in 304 or 314 or permission of instructor.

**411 Assessment of Special Populations (3)**

Assessment and programming of fitness, motor, and functional skill behaviors for individuals with special needs. (Lec. 2, Lab. 2) Pre: 410, 369 or permission of chairperson.

**415 Classroom Management, Communication, and Discipline Skills for Teaching Physical Education (3)**

Psycho-social bases of elementary and secondary student behaviors related to the physical education environment. Recognition of cultural differences and diverse communication styles, and techniques to decrease management episodes and increase student motivation. (Lec. 3) Pre: 304 and 314; PSY 113, and 232; and admission to the teacher education program; or permission of instructor. Not for graduate credit.

**420 Fitness Programs for Individuals with Chronic Diseases (3)**

Theory and application of physical fitness programs and testing of individuals with cardiovascular, musculoskeletal, and metabolic diseases. (Lec. 3) Pre: 325, 334, and 335. Not for graduate credit.

**425 Fitness and Wellness Program Development (3)**

Development and administration of fitness and wellness programs. Includes program leadership and managerial skills for corporate, commercial, community, and clinical settings. (Lec. 3) Pre: 275.

**430 Adapted Aquatics (3)**

Planning, administering, and teaching adapted aquatics. Application of kinesiological concepts, characteristics, and methods of teaching aquatics to people with disabilities. (Lec. 2, Lab. 2) Pre: 410, intermediate level swimming ability, admission to the teacher education program or permission of instructor.

**475 (375) Women in Sport: Contemporary Perspectives (3)**

Survey of issues relating to gender, herstory, governance, physiology, psychology, economics, diversity, and the institutionalization of women involved in sport. (Lec. 3)

**478 Sport, Cultural Politics, and Media (3)**

Critical examination of social issues and cultural politics mediated through print, film, television, Internet and video games related to sports, fitness, and physical activity. (Lec. 3) Pre: SOC 100 or WMS 150 or JOR 110 or KIN 278 or permission of instructor.

**484 Supervised Field Work (12)**

Supervised field work in health, physical education, or recreation in community and/or commercial agencies. (Practicum) Pre: 369, 370, and 420. Not for teacher certification or graduate credit.

**486 Field Experience Seminar (3)**

Seminar for students completing fieldwork in health, physical education, or recreation. Topics include identification of problems, resource materials, and discussions of future career concerns. (Seminar) Pre: concurrent enrollment in 484. Not for graduate credit in physical education.

*Note: Student teaching includes practicum in both elementary and secondary schools under the supervision of the department. See EDC 485, 486, 487, 488, and 489.*

**501 Seminar in Kinesiology (1)**

This course provides a forum for students, faculty, and staff from the Department of kinesiology to present and discuss research and current issues related to the field of kinesiology. (Seminar) Pre: graduate standing or permission of chairperson. Must be taken twice prior to graduation.

**508 Physical Activity Promotion: Theory and Practice (3)**

This course examines theory and methods to facilitate individual and group behavior change, focused on promoting physical activity. Concepts in behavioral sciences affecting health behavior, motivation, and decision making are explored. (Lec. 3)

**510 Current Issues in Physical Education, Health, and Recreation (3)**

Designed to develop student awareness of contemporary situations that are of concern to the above professions. Extensive review of contemporary literature. Critical analysis of selected issues, their components and effects. (Lec. 3) Pre: permission of instructor.

**515 Physiology of Physical Activity and Health (3)**

The physiological basis of human movement, including contemporary topics such as the relationship between physical activity and health, obesity, exercise and aging, and youth fitness. (Lec. 3)

**520 Curriculum Construction in Physical Education (3)**

Analysis of criteria and procedures for curriculum construction in physical education. Standards for the evaluation and revision of elementary and secondary school physical education courses. (Lec. 3) Pre: permission of instructor.

**524 Obesity: Causes, Consequences, and Care (3)**

Overview of the obesity epidemic and implications for morbidity and mortality. Consideration of energy balance issues and metabolism. Emphasis on the role of physical activity in preventing and treating obesity. (Lec. 3) Pre: graduate standing or permission of instructor.

**530 Research Methods and Design in Physical Education and Exercise Science (3)**

An introduction to the basic aspects of research, including problem selection, literature review, instru-

mentation, methodology, and the writing of research reports and articles. (Lec. 3) Pre: competence in basic statistics and permission of instructor.

**531 Advanced Experimental Techniques in Exercise Science (3)**

Instruction in using the computer for research purposes with an emphasis on data analysis (i.e., statistical techniques). (Lec. 3) Pre: 530 or permission of instructor.

**545 Advanced Motor Development (3)**

Advanced study of the continuous process of motor development across the life span. Planning and directing movement experiences, factors mediating growth and development, and individual and gender differences are investigated. (Lec. 3)

**555 Women in Sport: Issues and Controversies (3)**

Critical analysis of women's sports using contemporary feminist perspectives. Emphasis on psychosocial and political-economic constructs that regulate women's emergence into sport. (Lec. 3)

**559 Principles of Exercise Testing and Interpretation (3)**

Theory and practical application of the graded exercise test including oxygen consumption measurements. Special emphasis on writing a safe exercise prescription based on the interpretation of the exercise test data. (Lec. 3) Pre: BIO 343 or permission of instructor.

**560 Seminar in Health, Physical Education, and Recreation (3)**

Selected topics within the three areas, depending on availability of specialized instruction including visiting professorship. (Seminar) Pre: permission of instructor.

**562 Advanced Exercise Physiology (3)**

Advanced study of the physiological factors limiting physical performance and work capacity with emphasis on the effects of physical conditioning on health and fitness. (Lec. 3) Pre: BIO 343 or permission of instructor.

**563 Epidemiology of Physical Activity (3)**

Presentation of exercise epidemiology and the effects of exercise on health. Current findings regarding the association between physical activity and chronic diseases and their risk factors. (Lec. 3) Pre: graduate standing or permission of instructor.

**564 Physiology of Aging (3)**

Library searches, reports, and discussion of topics of current research on the physiology of aging. Subject matter adapted to meet interests of students. (Lec. 3) Pre: BIO 242 or permission of instructor.

**565 Cardiovascular Disease: Prevention and Rehabilitation (3)**

Focus on cardiac rehabilitation, underlying pathology and pathophysiology, diagnostic and prognostic testing, and principles of rehabilitation. Special em-

phasis on electrocardiographic analysis and exercise intervention. (Lec. 3) Pre: BIO 343 or permission of instructor.

**578 Cultural Studies of Sport and Physical Activity**

Survey course focusing on the social, cultural, political, and economic conditions that produce and influence sport and physical activity. Emphasis on critical analyses of the social and political dimensions of physical activity, fitness, sport, health and wellness. (Lec. 3) Pre: 278, graduate level standing, or permission of instructor.

**580 Inclusive Practices in Adapted Physical Education (3)**

Strategies for inclusion of children and youth with disabilities into general physical education, including legal, moral, and ethical considerations and responsibilities; theories of inclusive practices; and application based on individual needs. (Lec. 3)

**585 Disability Sports (3)**

Sports and recreational opportunities for individuals with disabilities; federal legislation effecting participation opportunities; spectrum of participation in community recreation to elite athletic opportunities within various disability sports organizations and events. (Lec. 3)

**581 (or PSY 581) Psychological Aspects of a Healthy Lifestyle (3)**

Considers the psychological processes and behaviors related to exercise participation and the adoption of a healthy lifestyle. Analysis of models and theories used in exercise psychology, associated research, and the implications for practitioners. (Lec. 3) Pre: graduate standing, PSY 113 and 232, or permission of instructor.

**582 Applied Sport Psychology (3)**

Focus on performance enhancement techniques (i.e., imagery, goal-setting, etc.) designed to improve individual and team performance. (Lec. 3) Pre: graduate standing, PSY 113 and 232, or permission of instructor.

**585 Adapted Physical Activities for Special Populations (3)**

Characteristics and needs for special populations: retarded, emotionally disturbed, learning disabled, sensory impaired, and obese. Adapted activities based on individual needs. Effects of federal legislation on programs discussed. (Lec. 3) Pre: permission of instructor.

**591 Special Problems (3)**

Written paper reporting an in-depth investigation of a pertinent problem in the field, including a review of relevant literature, and analysis and solution of the problem based on scientific methodology, with recommendations for improved practices. (Independent Study) Limited to and required of all graduate students in physical education who elect the non-thesis option.

**592 Internship in Physical Education and Exercise Science (3)**

Directed field experience under the supervision of a faculty member and a professional member of the cooperating institution. Application of knowledge, synthesis of practical experiences. Paper required. (Practicum) Pre: a minimum of 12 graduate credits in physical education and permission of major professor and chairperson.

**595 Independent Study (3)**

Development of an approved project supervised by a member of the graduate faculty. (Independent Study) Pre: permission of chairperson and instructor. May not be substituted for 591 or 599.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## **Labor Relations and Human Resources (LRS)**

*Director:* Professor Scholl

**432 Work, Employment, and Society**

See Sociology 432.

**480 (or ECN 480) Seminar in Labor Studies (3)**

Intensive studies examining various important topics in labor studies. Class discussion of assigned readings and student reports. (Lec. 3) Pre: permission of instructor. Not for graduate credit.

**500 (or MBA 571) Labor Relations and Human Resources (3)**

Introduction to labor relations and human resources, including employment practices in unionized and non-union organizations; also issues related to data sources and research methodology. (Lec. 3) Pre: graduate standing or permission of instructor.

**503 Problems in Public Personnel Administration**

See Political Science 503.

**520 Developments in Worker Representation (3)**

Structure, functions, responsibilities, and programs of unions and union leadership. Emphasis on policies and decision making. Evaluation of labor and management performance. Consideration of administrative problems associated with growth of white collar unions. (Lec. 3) Pre: graduate standing or permission of instructor.

**521 (or PSC 521) Comparative Labor Relations Systems (3)**

Comparative labor and industrial relations systems, including union, management, and government functions and roles; also the functions of international organizations in labor relations. (Lec. 3) Pre: permission of instructor.

**526 (or ECN 526) Economics of Labor Markets (3)**

The theory of labor market behavior, and application of theory for public policy analysis in areas such as discrimination, unemployment, and education. (Lec. 3) Pre: ECN 201 and 202 or 590 or equivalent.

**531 Employment Law (3)**

Analysis of legislation protecting worker health, employment, and income security, including OSHA, workers' compensation, equal opportunity, fair labor standards, Walsh-Healy and Davis-Bacon, pension funds, unemployment compensation, and social security. (Lec. 3) Pre: permission of Labor Research Center director.

**532 Seminar in Employment Law (3)**

Advanced seminar to review and evaluate current issues and changing trends in selected aspects of employment law. May be repeated for credit with different topic, for maximum of 6 credits. (Seminar) Pre: permission of instructor.

**533 Pension, Health Care, and Employee Benefit Programs (3)**

An analysis of employee assistance plans (EAPs), health fringe benefits, and pension plans and their negotiation within both private and public sectors. (Lec. 3) Pre: permission of instructor and Labor Research Center director.

**534 (or ECN 534) Information Sources and Uses in Labor Relations and Labor Economics (3)**

Analysis and use of data and information sources specific to the professional fields of labor and industrial relations and labor economics. A major project utilizing personal computer software is required. (Lec. 3) Pre: 526 and MBA 501 or permission of instructor. Not for graduate credit for M.B.A. or M.S. in accounting students.

**541 Labor Relations Law (3)**

Legal framework for private and public sector collective bargaining. Regulation of activities with emphasis on individual rights, collective rights, and policy considerations of federal and state courts, the NLRB, and state labor boards in determining society's rights. Case studies. (Lec. 3) Pre: graduate standing or permission of instructor.

**542 Labor Relations and Collective Bargaining (3)**

Collective bargaining literature, theories, and practice. Emphasis on the institutional features of bargaining in both public and private sectors as well as techniques and dynamics of the bargaining process. (Lec. 3) Pre: graduate standing or permission of instructor.

**543 (or PSC 543) Public Sector Labor Relations (3)**

Public sector (state, municipal, federal, police, fire, K-12 education, and higher education) collective bargaining theory, practice, and legal foundations. Comprehensive case studies. (Lec. 3) Pre: credit or

concurrent enrollment in 542 or permission of Labor Research Center director.

**544 (or HIS 544) Colloquium in Worker History (3)**

Selected topics in American worker history with an emphasis on the most recent literature in the field. (Seminar) Pre: graduate standing or permission of instructor.

**545 Arbitration and Mediation of Labor and Employment Disputes (3)**

Students prepare, present, and analyze labor and employment arbitration/mediations. The course also covers interest arbitration and innovative methods for resolving disputes. Pre: graduate standing or permission of instructor.

**546 Negotiation and Alternative Dispute Resolution (3)**

Examination of the interpersonal dynamics of negotiations and conflict resolution processes, including interest-based or collaborative bargaining in a variety of contexts; e.g. labor relations, community, environmental, divorce, racial, commercial. (Lec. 3) Pre: permission of instructor.

**551 (or MBA 571) Human Resource Strategy (3)**

Human resource issues addressed in context of changing product and labor markets, including relationship among human resource policies, the economic, social, and political environment, and firms' strategic objectives. (Lec. 3) Pre: permission of instructor.

**579 (or EDC 579) Labor Relations and Collective Bargaining in Education**

Collective bargaining in public and private educational sectors, K-12, higher education; literature, theory, practice, and legal foundations in education. Comprehensive case studies will be used. (Lec. 3)

**580 Professional Seminar in Labor Relations and Human Resources (3)**

Advanced labor relations seminar of variable coverage and focus; adjusted yearly to consider most recent labor relations developments. Major research paper required. (Seminar) Pre: final semester graduate standing in labor relations and human resources and permission of Labor Research Center director.

**581 Internship: Labor Relations and Human Resources (3-6)**

Variable length internship with a trade union, a public or private sector personnel or industrial relations department, or a governmental administrative or regulatory agency, under the supervision of both a URI Labor Research Center faculty member and a member of the affiliated organization. May be taken as one 6-credit unit or two 3-credit units. (Practicum) Pre: graduate standing in labor relations and human resources and permission of Labor Research Center director. S/U only.

**590, 591 Directed Readings and Research in Labor Relations and Human Resources (3 each)**

Readings and research under the direction of LRC-associated faculty to meet individual student requirements. (Independent Study) Pre: graduate standing in labor relations and human resources and permission of Labor Research Center director and instructor.

**Landscape Architecture (LAR)**

*Chairperson:* Professor Green

**101 Freshman Inquiry into Landscape Architecture (1)**

Introduction for freshmen to landscape architecture: the profession, practices, and principles. Interact weekly with faculty and staff. Explore hands-on studio and field studies. (Lec. 1) S/U credit.

**201 Survey of Landscape Architecture (3)**

Introduction to landscape design theory and composition as an applied art form. (Lec. 3) (A)

**202 Origins of Landscape Development (3)**

Examines the impact of environment, social history, philosophy, art, and literature on architecture and landscape development from ancient to modern times. Emphasis on European Renaissance through contemporary United States. (Lec. 3) (L) [D]

**243 Landscape Architecture Graphics (4)**

Introduction to landscape graphic communication techniques with emphasis on design and construction drawing and perspective illustration. (Lec. 2, Studio 4)

**244 Basic Landscape Architectural Design (4)**

Introduction to the development of outdoor space with emphasis on the design process and the manipulation of spatial volumes. (Lec. 2, Studio 4) Service learning. Pre: 243.

**300 Computers in Landscape Architecture (4)**

Intensive course in computer usage for landscape architects. Focus on the application of landscape architecture computer-aided design software to project development applications. (Lec. 2, Studio 4) Pre: sophomore standing in landscape architecture.

**301 Landform Expression (2)**

Examines the three-dimensional relief of the earth's surface as a physical design element. Introduction to methods of land measurement, graphic depiction, and sculptural interpretation. (Lec. 1, Lab. 2) Pre: 244 and MTH 111. Intended for landscape architecture majors only.

**343 Landscape Architecture Studio I (4)**

Landscape concepts in graphic form. Emphasis on preparing landscape plans for small- to intermediate-scale properties. Students study in a professional studio environment. (Lec. 2, Studio 4) Pre: 201, 202, and 244. Intended for landscape architecture majors only.

**344 Landscape Architecture Studio II (4)**

Continuation of landscape concepts and graphics. Emphasis on drawing landscape plans for intermediate- to larger-scale properties. Advanced rendering. (Lec. 2, Studio 4) Pre: 301, 343, and 345. Pre: credit or concurrent enrollment in 346. Intended for landscape architecture majors only.

**345 Landscape Construction I (4)**

A comprehensive survey of construction materials and their uses in landscape construction. (Lec. 2, Studio 4) Pre: 244 and 300. Intended for landscape architecture majors only.

**346 Landscape Construction II (4)**

The study of soil adjustment: grading, drainage, cut and fill, reshaping of earth surfaces. (Lec. 2, Studio 4) Pre: 300, 301, and 345. Intended for landscape architecture majors only.

**353 (or PLS 353) Landscape Plants I (3)**

Identification and description under fall conditions; classification and adaptation of the important trees and shrubs including broadleaf evergreens and their value in ornamental plantings. (Lec. 1, Lab. 4) Pre: BIO 104A or PLS 150.

**354 (or PLS 354) Landscape Plants II (3)**

Identification and description under winter and spring conditions; classification and adaptation of the coniferous evergreens, vines, and groundcovers and their value in ornamental plantings. (Lec. 2, Lab. 2) Pre: 353.

**399 Landscape Architecture Internship (1-6)**

Directed work experience program at landscape architecture offices, contracting firms, and related industries. (Practicum) Pre: permission of instructor.

**443 Planting Design (4)**

The use of plant materials in landscape composition. Combines spatial definition of various land uses with plant selection. Preparation of plans, details, and specifications. (Lec. 2, Studio 4) Pre: 344 and 354. Intended for landscape architecture majors only. Not for graduate credit.

**444 Landscape Architecture Studio III: Sustainable Design (4)**

Environmental analysis and sustainable design principles are emphasized in this studio which focuses on the preparation of ecologically based designs for individuals and communities. Sustainable concepts, public workshops and presentations (Lec. 2, Studio 4) Service learning. Pre: 344 and 346. Intended for landscape architecture majors only. Not for graduate credit.

**445 Landscape Architecture Studio IV (4)**

Study of comprehensive landscape architectural projects. Coordination of research, preparation of contract documents, and office procedures. (Lec. 2, Studio 4) Service learning. Pre: 443 and 444.

Intended for landscape architecture majors only. Not for graduate credit.

**447 Professional Landscape Architectural Practice (3)**

Professional practice, ethics, marketing design services, preparation of contract documents, and effective time management. (Lec. 3) Pre: senior standing in landscape architecture. Not for graduate credit.

**482 Applied GIS for Landscape Architecture (3)**

GIS software, data, and orthophotos will be explored and used for site analysis and the creation of plans suitable for standing alone or being incorporated into CAD design/planning applications. (Lec. 2, Lab. 2) Pre: junior or senior landscape architecture major or permission of instructor. Not for graduate credit.

**491, 492 Special Projects and Independent Study (1-3 each)**

Special work to meet specialized needs in the landscape architecture profession. (Independent Study) Pre: permission of instructor. Not for graduate credit.

**Languages (LAN)**

*Chairperson:* Professor Morello

**191 Beginning Foreign Language I (3)**

Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation in a foreign language not included in regular departmental offerings. (Lec. 3) Pre: no prior experience in a specific language is required. May be repeated for credit for different languages. Choice of specific language to be taught subject to availability and student demand. (FC) [D]

**192 Beginning Foreign Language II (3)**

Continuation of 191. Students enrolling in this course should have taken 191 or equivalent in the same language. (Lec. 3). May be repeated for credit for different languages. Choice of specific language to be taught subject to availability and student demand. (FC) [D]

**193 Intermediate Foreign Language I (3)**

Development of facility in speaking, listening comprehension, writing, and reading texts of moderate difficulty in a language not included in regular departmental offerings. Students enrolling in this course should have taken 192 or equivalent in the same language. (Lec. 3) Choice of specific language to be taught subject to availability and student demand. (FC) [D]

**194 Intermediate Foreign Language II (3)**

Continuation of 193. Students enrolling in this course should have taken 193 or equivalent in the same language. (Lec. 3) Choice of specific language to be taught subject to availability and student demand. (FC) [D]

**205, 206 Advanced Foreign Language I and II (3)**  
 205: Further development of all language skills with emphasis on writing and reading. Students enrolling in this course should have taken HBW 104 or JPN 104 or LAN 194 or equivalent in the same language.  
 206: Continuation of 205. Students enrolling in this course should have taken 205 or equivalent in the same language. (Lec. 3) (FC) [D]

## Latin (LAT)

*Section Head:* Professor Suter

### 101 Beginning Latin I (3)

Latin grammar and syntax. Exercises in reading prose. (Lec. 3) Pre: no previous Latin is required. Will not count toward the language requirement if the student has studied Latin for more than one year within the last six years. (FC) [D]

### 102 Beginning Latin II (3)

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

### 301 Intermediate Latin (3)

Grammar review; readings such as Petronius' *Satyricon*. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

### 302 Intermediate-Advanced Latin (3)

Study of Latin texts from different time periods and different genres; syllabus changes on a four-year rotational basis. Students enrolling in this course should have taken 301 or equivalent. (Lec. 3) May be repeated for a maximum of 12 credits with different topics. May be taken once for General Education credit. (FC) [D]

### 310 Latin Across the Curriculum (1)

Reading of original Latin texts and discussion in conjunction with courses throughout the University curriculum. Designed to maintain language skills and to enrich study of different subjects by using texts in the original language. (Lec. 1) Pre: 301 or permission of instructor.

### 497, 498 Directed Study (1–6 each)

Individual readings and research. (Independent Study) Pre: acceptance of a project by a faculty member; approval of section head. May be repeated for credit with different topic.

## Latin American Studies (LAS)

*Committee Chair:* Associate Professor Morín

### 390 The Hispanic Caribbean: Study Abroad in the Dominican Republic (3)

Emphasis on the Dominican Republic, Cuba, and Puerto Rico. Topics will include colonization and slavery, race, gender, religion, European and U.S. interventionism, migration, and development. (Lec. 3) Pre: SPA 104; HIS 180 is suggested.

### 397 Directed Study for Senior Research Project (3)

Research in a particular area of Latin American studies. Project must be approved by the LAS Committee. (Independent Study) Pre: approval of LAS Committee and instructor.

*The following are related courses offered by various departments of the University.*

#### Anthropology

303 New World Prehistory  
 315 Cultures and Societies of Latin America  
 470 Problems in Anthropology

#### Communication Studies

361 Intercultural Communication

#### Economics

338 International Economics  
 363 Economic Growth and Development

#### History

180 Introduction to Latin American Civilization  
 382 History of Modern Latin America  
 391 Directed Study or Research

508 Seminar in Asian or Latin American History

#### Political Science

201 Introduction to Comparative Politics  
 431 International Relations  
 432 International Government

#### Portuguese

335, 336 Topics in the Literature of the Portuguese-Speaking World

#### Spanish

305 Early Spanish-American Literature and Culture  
 306 Modern Spanish-American Literature and Culture

393 Modern Hispanic-American Literature in Translation

470 Topics in Hispanic Literature

488 Spanish-American Poetry and Drama

489 The Spanish-American Narrative

#### 497, 498 Directed Study

570 Topics in Hispanic Literature and Culture

572 Evolution of Spanish-American Culture and Thought

574 Interpretations of Modern Spanish-American Thought

590 The Hispanic Presence in the United States

## Letters (LET)

*Coordinator:* Associate Dean Dvorak

### 151 Topics in Letters (3)

Study of the history of thought, of the search for values, of the attempt to define the human condition, as reflected in written texts, both past and present. (Seminar) May be repeated for credit with different topic. May be taken once for General Education credit. Topics: L Francophone Hip-Hop Culture (L) or (FC) [D]; Q Contemporary France (L) or (FC) [D]; R The European Union (L) or (FC) [D].

### 351 Topics in Letters (3)

Study of the history of thought, of the search for values, of the attempt to define the human condition, as reflected in written texts, both past and present, at an advanced level. (Seminar) Pre: junior standing. May be repeated for credit as often as the topic changes.

## Library (LIB)

*Dean:* Professor Maslyn

### 120 Introduction to Information Literacy (3)

In-depth exploration and practice of information literacy skills designed to support college-level research and lifelong learning. (Lec. 3/Online) (EC)

### 140 Special Topics in Information Literacy (1)

Introduction to core concepts of information literacy and essential skills in finding, analyzing, organizing, and presenting information. (Lec. 1) Must be taken concurrently with a course that requires information literacy skills.

### 508 Seminar in Biological Literature

See Biological Sciences 508.

## Library and Information Studies (LSC)

*Director:* Professor Eaton

*Students in good standing may take up to 6 credits of graduate-level library and information studies courses in their senior year with the permission of the director of the Graduate School of Library and Information Studies.*

### 502 Management of Library and Information Services (3)

Introduction to the process, principles, practices, theories, and case studies in the administration, management, and supervision of libraries and information services. Focus on management functions: planning, organizing, staffing, directing, and controlling. (Lec. 3)

### 503 Collection Development (3)

Introduction to process, practices, and problems of collection building, maintenance, and evaluation regardless of format or subject of material, type of institutional setting, or community or client group served. (Lec. 3)

### 504 Reference and Information Services (3)

Practical experience in the use of basic electronic and print information sources with readings and discussion on the philosophy and administrative aspects of reference work. (Lec. 3)

### 505 Organization of Information (3)

Theory and practice of organizing information following national and international standards; focus on bibliographic information. Emphasizes the un-

derstanding and application of cataloging and classification principles, standards, tools, bibliographic utilities, and networks. (Lec. 3)

**506 Technical Services (3)**

Principles and policies in the acquisition, organization, conservation, and circulation of materials in libraries and information centers. Includes examination of automation of library processes. (Lec. 3)

**508 Introduction to Information Science and Technology (3)**

Introduction to the organization, retrieval, and analysis of information, and the technologies used to control the manipulation and dissemination of information in library and information settings.

**510 History of Books and Printing (3)**

The art and craft of book production through the ages; printers, methods, and materials with consideration given to the role of the book in cultural development. (Lec. 3)

**514 Information Policy (3)**

This course provides an opportunity to examine the large world of information policy and how changing technology, specifically the Internet, has affected our information policies. (Lec. 3)

**515 Informational Ethics and Intellectual Freedom (3)**

Examines the history, socially constructed norms, and legal context framing issues in LIS including privacy, censorship, and intellectual freedom; applies principles of ethical reasoning to professional decisions. (Lec. 3)

**517 Community Relations for Libraries (3)**

Includes public relations, advocacy, determining community needs, identifying potential partners, building partnerships, developing a community relations plan, and envisioning the library's future. Incorporates programs and strategies of core professional organizations. (Lec. 3) Pre: 502 or permission of instructor.

**518 International and Comparative Librarianship (3)**

Library developments on an international level. Application of comparative method to analysis of library issues in the U.S.A. and foreign countries. Major international library and information organizations and their programs. (Lec. 3) Pre: 3 core courses or permission of the instructor.

**520 School Library Media Services (3)**

The role of the library media specialist as teacher, information specialist, instructional partner, and program manager, with emphasis on creating instructional programs in schools. Summer or fall semester prior to practicum. (Lec. 3) Pre: completion of 21 hours including core courses 502, 504, 505, and 508 or permission of instructor.

**521 Public Library Service (3)**

Planning, evaluation, and programming in public libraries, with an emphasis on community analysis and responsive services. Development of a grant proposal or equivalent project required. (Lec. 3) Pre: 502 or permission of instructor.

**522 College and University Library Service (3)**

Study of the functions, organization, management, and services of college and university libraries. (Lec. 3) Pre: 502.

**523 Special Library Service (3)**

A survey of some of the major categories of special libraries in academia, corporations, foundations, government agencies, and the military, typically including museums, conservatories, divinity schools, legal institutions, businesses, laboratories, industries, and health care organizations. (Lec. 3) Pre: 502.

**524 Teaching About Information: Philosophy and Methodology (3)**

An introduction to all aspects of instructing a diverse clientele in the effective use of information in all forms. Philosophy, cognitive aspects, methodologies, media, and the administration, coordination, and evaluation of information literacy instruction will be considered (Lec. 3) Pre: 504 or permission of instructor.

**525 Multiculturalism in Libraries (3)**

Determining information needs and planning library collections, services, and programs for a diverse population. Historical, philosophical, and comparative aspects of multiculturalism in libraries will also be considered. (Lec. 3) Pre: 6 graduate credits in library and information studies or permission of instructor.

**527 Information Literacy Instruction (3)**

Design and teach research strategies to undergraduates in conjunction with academic courses to teach effective, efficient, and honest use of library and information resources. (Lec. 3) Pre: 504.

**528 Instructional Technology in Library and Information Services (3)**

Provides an introduction to instructional design, development, and motivation theories and their application in producing instructional materials, including emerging technology in library and information environments. (Lec. 3)

**529 Information Design (3)**

Provides an introduction to the analysis, planning, presentation, and evaluation of effective communication through the use of tools and theories of communication, and message, instructional, and information design. (Lec. 3)

**530 Reading Interests of Children (3)**

Building, maintaining, evaluating, and promoting collections for children in public libraries and elementary school media centers. Fiction and nonfic-

tion books emphasized; digital and other resources also discussed. (Lec. 3)

**531 Reading Interests of Young Adults (3)**

Building, maintaining, evaluating, and promoting collections to serve the special interests and information needs of adolescents in public and secondary school libraries. Focus on books; graphic novels, Internet, etc. included. (Lec. 3)

**533 Digital Resources for Children and Teens (3)**

Investigate informational, educational, and recreational resources, primarily on the Internet. Emphasis on selection, evaluation, promotion, and the development of information literacy. (Lec. 3) Pre: 530 or 531 or permission of instructor

**535 Public Library Youth Services (3)**

Public library services to children and young adults, with emphasis on the development of programs to meet library goals and objectives. (Lec. 3) Pre: 502 or permission of instructor.

**537 Health Sciences Librarianship (3)**

Serves as an introduction to the field. Covers the literature, vocabulary, computer applications, reference tools, information retrieval, and environments relating to health sciences libraries. (Lec. 3) Pre: 502 and 504 or permission of instructor.

**538 Law Librarianship (3)**

Introduction to legal bibliography and research and to a broad range of problems involved in the administration and operation of various kinds of law libraries. (Lec. 3) Pre: 502 and 504 or permission of instructor.

**539 Business Information (3)**

An introduction to many aspects of business information services, as well as to business information in all formats. This course will emphasize services in business libraries and information centers, and the fields of corporate intelligence and knowledge management will also be considered and discussed. (Lec. 3) Pre: 504.

**540 Humanities Information and Materials (3)**

Information needs and services of all areas of the humanities. Unique aspects of library services and materials in all formats will be considered. Pre: 504.

**541 Social Science Information (3)**

Information needs and services in all areas of the social sciences and the professions, including information in all formats. Pre: 504.

**542 Library Materials in Science and Technology (3)**

Library resources in science and technology, including the major works, serial publications, and reference and bibliographical materials. (Lec. 3) Pre: 503 and 504.

**543 Government Publications (3)**

Survey of the publishing activities and publications of national, state, and local governments with emphasis on the publications of the United States government. (Lec. 3) Pre: 504.

**544 Visual Information Science (3)**

An introduction to the interdisciplinary study of visual information science related to visual information (data) collection, analysis, processing, transmission, utilization, and communication in modern and digital libraries and information centers. (Lec. 3) Pre: 508 or permission of instructor.

**545 Indexing and Abstracting (3)**

Principles and techniques of indexing for the purpose of information storage and retrieval. Includes periodical indexing, book indexing, automatic indexing, abstracting, and thesaurus construction. (Lec. 3) Pre: 504.

**547 Online Searching and Services (3)**

Introduction to computerized information retrieval and the provision of computerized information services in libraries, including hands-on experience. (Lec. 3) Pre: 504.

**548 Information Architecture (3)**

Introduces principles of information architecture, library science, and information science to plan, design, develop, and evaluate cohesive Web sites and intranets that are attractive, navigable, manageable, and expandable. Pre: 508 or permission of instructor.

**549 Information Storage and Retrieval (3)**

Theory, methods, evaluation, and research of analyzing, storing, indexing languages, information storage media, information storage and retrieval systems, and information seeking and retrieving in libraries and information services. (Lec. 3) Pre: 504, 505.

**550 Organization of Digital and Nonbook Resources (3)**

Using the most current international and national standards for organization of digital and nonbook resources, the course emphasizes not only bibliographic control of these resources for retrieval but also issues relating to subject analysis, standards, access, and other mark-up languages for better retrieval. (Lec. 3) Pre: 505.

**557 Research and Evaluation in Library and Information Services (3)**

Introduction to research methods for community analysis, information needs assessment, and evaluation of library and information services; critique of published research. Includes substantial paper involving significant independent study. (Lec. 3) Pre: completion of 15 credits or permission of instructor.

**562 Administration of Special Collections, Archives, and Manuscripts (3)**

Principles and techniques for administering manuscript and archival repositories, including acquisition policies, appraisal criteria, methodology, and preservation practices. (Lec. 3) Pre: core courses 502–508, or permission of instructor.

**564 Introduction to Preservation of Library Materials (3)**

Organization, management, principles, and techniques as they apply to the development and administration of a library preservation program. Includes causes of deterioration of materials, deacidification, and reformatting and selecting for preservation. (Lec. 3)

**565 Rare Book Librarianship (3)**

Organization, management, principles, and techniques as they apply to the development and administration of rare book collections. (Lec. 3) Pre: 510 or permission of instructor.

**593 Independent Work (1–6)**

Supervised reading or investigation in areas of special interest. Student must obtain written approval prior to registration for the semester for which the study is proposed. (Independent Study) Pre: 18 credits of library science with B average, and 557 or permission of instructor. 593 and 595 may be repeated for a combined total of 6 credits.

**595 Professional Field Experience (1–6)**

Directed field experience applying theory to practice in libraries, information centers, and related organizations. Jointly supervised by a member of the faculty and a professional in the cooperating institution. (Practicum) Pre: 18 credits of library science with a B average, 45 hours per credit. 593 and 595 may be repeated for a combined total of 6 credits.

**596 Professional Field Experience: School Library Media Practicum and Seminar (9)**

Directed field experience in two school library media centers (150 hours in elementary and 150 hours in secondary). Perform roles and demonstrate competencies of a library media specialist. Bi-weekly seminars. (Lec./Lab. 9) Pre: 520 with a B or better and 30 credits of library science with a B average or permission of the instructor.

**597 Selected Topics (1–3)**

Selected topics of current and special interest in library and information studies not covered in existing course offerings. Topics and number of credit hours announced prior to each offering. May be repeated with different topics. (Lec. 1–3) Pre: permission of instructor.

**Linguistics (LIN)**

*Section Head:* Professor Rogers

**100 Language in Society (3)**

Topical approach to the study of language, varying from semester to semester and including, but not restricted to, such topics as the relationship of language to culture, society, behavior, geography, computers, and other languages. (Lec. 3)

**200 Language and Culture**

See Anthropology 200.

**202 Introduction to the Study of Language Evolution (3)**

The construction of theoretical models; the reconstruction of earlier stages of language, based on the structure of modern languages and their families. (Lec. 3) Pre: 200, 220, or ENG 330. (S) [D]

**220 (or APG 220) Introduction to the Study of Language (3)**

Introduction to the analysis and description of a language's sounds, forms, syntax, and meaning; the relationship of linguistics to other disciplines; and a survey of major schools of linguistic thought. (Lec. 3) (S)

**320 (or APG 320) Sociolinguistics (3)**

Presentation of the major areas of micro- and macro-sociolinguistics: speech acts, registers, repertoires, language attitudes, social correlates of phonological and syntactic features and changes. (Lec. 3) Pre: 200 or 220.

**330 Dynamics of Language Distribution (3)**

Geolinguistic survey of present-day distribution of languages and of factors affecting their spread and decline. Minority and colonial languages; language maintenance efforts; language contact phenomena. (Lec. 3) Pre: 220.

**408 The German Language: Past and Present**

See German 408.

**414 Romance Linguistics (3)**

Evolution of the major literary Romance languages from late Latin with emphasis on phonology and morphology. The diffusion and dialectal fragmentation of Romance. (Lec. 3) Pre: 202 or FRN 205, SPA 205, ITL 205, or permission of section head. Some knowledge of Latin recommended but not required. Not for graduate credit.

**420 Second Language Acquisition (3)**

An evaluation of current trends and developments in the understanding of second language learning; analysis of second language acquisition research and its practical implications. (Seminar) Pre: 200 or EDC 312 or 3 credits of language courses numbered 300 or above, or permission of section head. Next offered spring 2008.

**431 Applied Linguistics in the Language Laboratory (1)**

Principles of contrastive phonology and syntax and their application to the preparation, use, and evaluation of tape drills. Use of language laboratory equipment monitoring student exercises. Recommended for prospective teachers of language. (Lab. 2) Pre: 9 credits of language courses at the 300 level or above, or permission of section head.

**497, 498 Directed Study (3 each)**

Individual research and reports on problems of special interest. (Independent Study) Pre: 220 and acceptance of project by member and approval of section head.

*The following are related courses offered in the departments of Communicative Disorders, English, Modern and Classical Languages and Literatures, Philosophy, and Psychology.*

CMD 373 Phonetics

CMD 375 Language Development

ENG 330 The Structure of American English

ENG 332 The Evolution of the English Language

ENG 336 The Language of Children's Literature

ENG 337 Varieties of American English

ENG 530 Studies in Language and Linguistics

FRN 503 History of the French Language

ITL 408 The Italian Language

PHL 440 Philosophy of Language

PSY 388 The Psychology of Language

**Literature in English Translation**

Coordinator: Professor Manteiga

*The following courses are offered in the Department of Modern and Classical Languages and Literatures and may be used for major credit in comparative literature studies. They may not be used for major credit in English or languages. (CLA 391, 395, 396, 397 may be used for major credit in classics.)*

**Classics**

391 Ancient Laughter: The Comic Tradition in Greece and Rome

395 Greek Mythology: Gods, Heroes, and Humans

396 Myths of Rome

397 Greek Myth and Tragedy

**Comparative Literature Studies**

235 Modern Thought: Philosophy and Literature

250 Themes and Myths

335 Interdisciplinary Studies in Comparative Literature

350 Literary Theory and Criticism

450 Studies in Comparative Literature

**French**

391 Literature to 1789 in Translation

392 19th-Century Literature in Translation

393 20th-Century Literature in Translation

**German**

392 Masterpieces of German Literature

**Italian**

391, 392 Masterpieces of Italian Literature

395 Dante's *Divine Comedy***Russian**

391, 392 Masterpieces of Russian Literature

**Spanish**

391, 392 Spanish Literature in Translation

393 Modern Hispanic-American Literature in Translation

*The following courses are offered in the Department of English and may be used for major credit in comparative literature studies and in English. They may not be used for major credit in languages.*

**English**

160 Literatures of the World

335 Interdisciplinary Studies in Comparative Literature

350 Literary Theory and Criticism

366 Greek and Roman Drama

367 The Epic

468 Traditions of the Continental Novel

560 Studies in European Texts

*Literature in English translation courses and literature courses are offered in the Department of English and the Department of Modern and Classical Languages and Literatures, and constitute part of the offerings for a major in comparative literature studies.*

**Marine Affairs (MAF)**

Chairperson: Professor Juda

**100 Human Use and Management of the Marine Environment (3)**

Examination of uses and management efforts in the coastal and ocean environment. Assessment of problems arising from those uses and attempts to conserve resources, protect the environment, and minimize use conflicts in the context of changing technological capabilities, knowledge, and values. (Lec. 3) (S)

**120 New England and the Sea (3)**

An examination of the human and environmental impacts of the sea and its uses on the New England and Gulf of Maine region. Considers marine resource use and management from colonial to modern times. (Lec. 3)

**220 Introduction to Marine and Coastal Law (3)**

Basic principles of marine and coastal law in the United States. An integration of coastal zone, outer continental shelf, fisheries, marine pollution, and admiralty laws. (Lec. 3)

**312 The Politics of the Ocean (3)**

Survey of decision making with respect to the marine environment at the international, national, and local levels. Special emphasis on laws and treaties of the United States and the United Nations. (Lec. 3) Pre: 100.

**320 Shipping and Ports (3)**

An introduction to waterborne movement of cargo. An examination of shipping and port operations, innovations in maritime transportation systems, and the interplay of the operators, shipping, and ports. (Lec. 3) Pre: 100.

**330 World Fishing (3)**

The role of marine fisheries and aquaculture in world food production. Social, economic, legal, and scientific issues in fisheries management. (Lec. 3) Pre: 100.

**350 Caribbean Geography**

See Geography 350.

**410 Senior Seminar in Marine Affairs (3)**

Advanced work in the management of the coastal and marine environment, with special emphasis on case studies and student projects. Seniors only. (Seminar) Required for seniors in marine affairs. Not for graduate credit in marine affairs.

**413 Peoples of the Sea**

See Anthropology 413.

**415 Marine Pollution Policy (3)**

Introduction to management techniques for marine pollutants (biodegradable materials, nutrients, petroleum, metals, synthetic organics, radioactive materials, plastics, heat, and dredge spoils) with emphasis on strategies to limit environmental impacts. (Lec. 3) Pre: junior standing or above. Not for graduate credit.

**434 Introduction to Environmental Law**

See Community Planning 434.

**456 Polar Resources and Policy (3)**

Description of Arctic and Antarctic natural resources and examination of current issues associated with their development. Analysis of alternative management regimes with reference to treaties and continuing international negotiations. (Lec. 3)

**461 Coastal Zone Management (3)**

Examination of activities and management efforts in the coastal zone of both developed and developing countries and their impacts on the environment. Resolution of use conflicts. (Lec. 3)

**465 GIS Applications in Coastal and Marine Management (3)**

The use of geographical information systems (GIS) technology in coastal and marine settings. Database acquisition and management are emphasized. Case application in coastal zone management, artificial habitat, and fisheries management. (Lec. 3)

**471 Island Ecosystem Management (3)**

An ecosystem approach to the sustainable development and environmental management of mid-oceanic islands in the Caribbean and the Pacific Ocean. Topics include tourism, reef fishery, cultural

heritage, and marine conservation. Simulation game on island-wide management process. (Lec. 3)

**472 Marine Recreation and Tourism Management Seminar (3)**

Analysis of domestic and international case studies emphasizing identification of and solutions to problems of coastal recreation and tourism. Use of experiential learning. Emphasis placed on presentation, leadership, and negotiation skills. (Seminar)

**475 Human Responses to Coastal Hazards and Disasters (3)**

Examines the impact of hazards and disasters on human population inhabiting the coastal zone. Sets human adaptations to coastal hazards and disasters in an historical context. Extracts lessons learned for comparative analysis. (Lec. 3)

**482 Quantitative Methods in Marine Affairs (3)**

Introduction to descriptive and inferential statistics in geography and marine affairs. Emphasis on the spatial application of statistical tests with particular utility to the geographer and marine affairs student. (Lec. 3) Pre: STA 220 or equivalent for undergraduate students.

**484 Environmental Analysis and Policy in Coastal Management (3)**

Analysis of environmental policy strategies as applied in federal and state coastal management programs. Emphasis on coastal environmental assessment and program evaluation techniques, hazards management, regulatory frameworks, and environmental ethics. (Lec. 3)

**490 Field Experience in Marine Affairs (3–6)**

Supervised undergraduate internship within an approved work setting designed to provide students with on-the-job experience relevant to their academic training and career goals. Students are responsible for securing internship positions and learning contract. (Practicum) Pre: permission of instructor, senior standing recommended. Not for graduate credit.

**491, 492 Special Problems (3 each)**

Individual guidance in major readings and methods of research. (Independent Study) Pre: permission of chairperson.

**493 International Field Course in Coastal Management (1–2)**

Project-oriented course in coastal management. Students will collect field data overseas during the fall/ spring intersession, with report writing completed during the following spring semester. (Practicum) Pre: permission of instructor. May be repeated for up to 3 credits.

**494 Cases in Marine Policy (3)**

A single, current problem drawn from areas such as coastal management, ports, or fisheries is examined through detailed analysis of alternatives and decision

processes. (Seminar). Pre: permission of instructor or chairperson.

**499 Directed Study (1–3)**

Individual research and reports on problems of special interest, including honors thesis research. (Independent Study) Pre: permission of instructor.

**502 Research Methods in Marine Affairs (3)**

Emphasis on the application of alternative research methods utilized in a typical interdisciplinary study. Development of specific research projects. (Lec. 3) Pre: 482 or permission of chairperson.

**511 Ocean Uses and Marine Sciences (3)**

Introduction to selected ocean uses focusing on the interplay of public policy and marine science. Emphasis on policy implications of uses such as resource and energy extraction. (Lec. 3)

**512 (or PSC 512) Marine Science and Policy Analysis (3)**

The role of ocean science in initiation, forecasting, implementation, and evaluation of public policy is examined through waste disposal, protected areas, and oil development, among other topics. (Seminar) Pre: 511 or permission of instructor. For graduate standing only.

**515 Marine Pollution Policy (3)**

Introduction to management techniques for marine pollutants (biodegradable materials, nutrients, petroleum, metals, synthetic organics, radioactive materials, plastics, heat, and dredge spoils) with emphasis on strategies to limit environmental impacts. (Lec. 3) Pre: graduate standing only.

**516 (or CPL 516) Seminar on the Urban Water-front (3)**

The urban environment and its evolution, structure, and function as it pertains to metropolitan waterfronts and small recreational harbors. Emphasis on the permitting process, public participation, marine recreation, and management issues. Field trip and student project required. (Seminar)

**520 Seminar in Coastal Margin Management (3)**

Nature of oil, mineral, and fishery resources on the continental shelf and environmental issues are reviewed. Emphasis on the utility of data for policy development. (Seminar)

**521 Coastal Zone Law (3)**

Examination of the authority of different levels and agencies of government to make decisions affecting coastal regions. Survey of existing and proposed state and national legislation affecting coastal regions. (Lec. 3)

**523 Fisheries Law and Management (3)**

Examination of the relationship between law and fisheries policy on the international and national levels, law relating to fisheries, jurisdictional levels, function of law in implementing fisheries management policy. (Lec. 3)

**526 Management of Marine Protected Areas (3)**

Examination of ecological, political, legal, and social factors in establishing and managing marine protected areas. Case studies of MPA efforts highlight interrelationships among interest groups, institutions, and legislation. (Lec. 3)

**527 (or NRS 527) Marine Protected Areas: An Interdisciplinary Analysis (3)**

Examination of the ecological, political, social, cultural, and economic factors influencing the use of MPAs. (Lec. 3) Pre: permission of instructor.

**530 International and Domestic Coastal Area Management Seminar (3)**

Using international and national coastal management case studies, this seminar focuses on coastal management problems using an interdisciplinary, project-orientated approach to problem solving. Emphasis is placed on development of leadership, presentation, and negotiation skills. (Seminar)

**544 Water Resources Law (3)**

A comprehensive examination of key legal concepts within surface and groundwater law. Legal issues are framed within local, state, regional, federal, and international management and administrative settings. (Lec. 3) Pre: graduate standing or approval of instructor.

**562 Admiralty Law (3)**

Fundamentals of admiralty law: collisions at sea, bills of lading, marine insurance, and rights of seamen. Case studies of marine transportation problems and their resolution by law. (Lec. 3)

**563 Maritime Transportation (3)**

Passenger and commodity transportation. Analysis of the relationship between transportation services and the spatial distribution of activities. Emphasis on multimodel transport and bulk commodities. (Lec. 3) Pre: senior or graduate standing or permission of instructor.

**564 Port Operations and Policy (3)**

Analysis of coastal and international trade routes and the response of ports. Special emphasis on the container revolution, liquid natural gas transportation, and deep-water ports for supertankers. (Lec. 3)

**565 Cruise Ship Operations, Marketing, and Ports (3)**

Explores the many facets of the cruise ship industry from the points of view of social, management, and policy science. Designed to familiarize the student, utilizing an interdisciplinary approach, with the genesis, current status, and future roles of this dynamic industry. (Seminar) Pre: graduate standing, or seniors with permission of instructor.

**571 Marine Geography (3)**

The marine region as a unique complex of physical and cultural elements. The purpose is to analyze functional relationships within the region and to

assess forms of regional organization and control. (Lec. 3)

**577 (or PSC 577) International Ocean Law (3)**  
Principles of international law as they relate to ocean management problems. Jurisdiction in zones, such as territorial seas, exclusive economic zones, and the high seas will be examined, as well as the problems posed by zonal approaches to ocean-use management. (Lec. 3)

**578 International Ocean Organizations (3)**  
International organizations involved in marine-related activities, including their planning, management, regulatory, and assistance functions. Attention to the impact of organizations on ocean management efforts in the developed and developing world. (Lec. 3) Pre: 577 or permission of instructor.

**582 Coastal Ecosystem Governance (3)**  
This course links human impacts on coastal environments with existing or proposed governance solutions. Management regimes for individual sectors, coastal regions, and land/estuarine ecosystems are introduced and compared. (Seminar)

**586 Environmental Impact Assessment and Analysis (3)**  
Focuses on environmental impact assessment and auditing methods for public and private projects. Emphasis on mitigation and mediation of project alternatives, public hearing processes, and developing project reports. (Lec. 3)

**589 Master's Project Research (3)**  
Preparation of a major research paper for M.M.A. students under the guidance of a graduate faculty member. (Independent Study) Pre: graduate standing in the M.M.A. program. S/U credit.

**591, 592 Directed Study or Research (3 each)**  
Areas of special research interest of graduate students. (Independent Study) Pre: permission of chairperson.

**595 Problems of Modernization in Developing Nations**

See Resource Economics 595.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**602 Federal Ocean Policy and Organization (3)**  
Ocean policy development and implementation by the executive and legislative branches of government. Allocation of powers and analysis of the decision-making process for the oceans. (Lec. 3)

**651, 652 Marine Affairs Seminar (3 each)**  
Interdisciplinary seminar conducted by marine affairs program faculty supplemented by guest speakers from industry and government. Focuses on problems of marine resources development and management

at the local, state, national, and international policy levels. (Seminar)

**699 Doctoral Dissertation Research**  
Number of credits is determined each semester in consultation with the major professor or program committee. Maximum of 6 credits of 699 may be taken prior to completing approved dissertation proposal. (Independent Study) S/U credit.

## Marine and Environmental Topics

### Animal and Veterinary Science (AVS)

101 Introduction to Animal Science

323, 324 Animal Management I, II

331 Anatomy and Physiology

333 Anatomy and Physiology Laboratory

412 Animal Nutrition

472 Physiology of Reproduction

### Anthropology (APG)

413 Peoples of the Sea

### Aquaculture and Fisheries Science (AFS)

101 Freshman Inquiry into Fisheries and Aquaculture

102 Introductory Aquaculture

104 Introductory Aquaculture Laboratory

201 Shellfish Aquaculture

202 Finfish Aquaculture

211 Introduction to the Marine Environment Laboratory

270 Basic Scuba Diving in Science and Technology

290 Small Boats: Their Equipment and Operation

300 Aquaculture Health Management

311 Exploration of Marine Bioresources

315 Living Aquatic Resources

316 Living Aquatic Resources Laboratory

321 World Fishing Methods

322 Laboratory for World Fishing Methods

332 Interactions between Fisheries and Protected Species

342 Marine Auxiliary Systems

343 Vessel Repair and Maintenance

362 Crustacean Aquaculture

380 Inshore and Coastal Navigation

381 Mid-Ocean Navigation

415 Fishery Science

416 Fishery Science Laboratory

421 Design of Fish Capture Systems

425 Aquaculture and the Environment

426 Ecological Aquaculture

432 Marine Finfish Aquaculture

433 Research Diving Methods

434 Aquatic Food Quality and Processing

435 Aquatic Food Product Development

481 Shellfish Aquaculture Laboratory

483 Salmonid Aquaculture

486 Applied Physiology of Fish

500 Diseases of Aquatic Origin

501, 502 Seminar

510 Application of Quantitative Methods to Marine Fisheries Ecology

508 Seminar in Biological Literature

516 Early Life History of Aquatic Animals

521 Evaluation of Fish Capture Systems

531 Fish Stock Assessment

532 Experimental Design

534 Animal Virology

536 Virology Laboratory

555, 556 Pathology Rotation

576 Seminar in Genetics of Aquatic Organisms

581 Current Topics in Molluscan Aquaculture

584 Advanced Aquaculture Systems

586 Fish Nutrition

### Biological Sciences (BIO)

101, 102 Principles of Biology I, II

130 Topics in Marine Biology

262 Introductory Ecology

286 Humans, Insects, and Disease

345 Marine Environmental Physiology

355 Marine Invertebrates of Southern New England

360 Marine Biology

418 Ecology of Marine Plants

441 Environmental Physiology of Animals

442 Mammalian Physiology

445, 545 Endocrinology I, II

455 Marine Ecology

457 Marine Ecology Laboratory

458 Freshwater Ecology

465 Biology of Algae

466 Vertebrate Biology

467 Animal Behavior

469 Tropical Marine Invertebrates

475 Coral Reef Ecology

495 Tropical Marine Biology Research

524 Methods in Plant Ecology

541 Comparative Physiology of Marine Animals

551 Seminar in Marine Ecology

560 Seminar in Plant Ecology

561 Behavioral Ecology

563 Ichthyology

567 Natural Selection

568 Ornithology

664 Phytoplankton Ecology

675 Advanced Ecology Seminars

### Chemical Engineering (CHE)

212 Chemical Process Calculations

403, 404 Introduction to Ocean Engineering Processes I, II

534 Corrosion and Corrosion Control

535 Advanced Course in Corrosion

548 Separations for Biotechnology

### Civil and Environmental Engineering (CVE)

374 Environmental Engineering

375 Environmental Engineering Laboratory

470, 471 Water and Wastewater Transport Systems I, II

474 Water Quality Sampling and Analysis

475 Water in the Environment

478 Hazardous Waste Disposal and Solid Waste Management

485 Environmental Engineering Geophysics

570 Sanitary Chemistry

572 Biosystems in Sanitary Engineering  
 573 Theory of Water Purification and Treatment  
 579 Soil Behavior  
 580 Consolidation, Seepage, and Clay Mineralogy  
 581 Experimental Geomechanics  
 583 Advanced Foundation Engineering  
 587 Groundwater Flow and Seepage Pressures  
 588 Groundwater Hydrology  
 672 Water Pollution Control and Treatment of Wastewater  
 677 Stream and Estuarine Analysis

**Community Planning (CPL)**  
 300 Introduction to Global Issues in Sustainable Development  
 434 Introduction to Environmental Law  
 487 International Development Internships  
 495 International Development Seminar  
 511 Planning and Natural Environmental Systems  
 538 Site Planning  
 539 Environmental Law  
 545 Land Development Seminar  
 549 Seminar in Ecological Planning

**Economics (ECN)**  
 415 Environmental Harms and Sanctions  
**Entomology (ENT)**  
 390 Wildlife and Human Disease  
 411, 511 Pesticides and the Environment  
 529 Systems Science for Ecologists  
 544 Insect Pest Management  
 561 Aquatic Entomology  
**Environmental Economics (EEC)**  
 105 Introduction to Resource Economics  
 205 Resource Management and Conservation  
 310 Economics for Environmental Resource Management and Policy  
 345 International Trade and the Environment  
 410 Fish and Wildlife Economics  
 432 Environmental Economics and Policy  
 435 Aquacultural Economics  
 440 Benefit-Cost Analysis  
 441 Markets, Trade, and Natural Resources  
 501 Graduate Seminar in Natural Resources Economics  
 502 Research Methodology in Environmental and Natural Resource Economics  
 514 Economics of Marine Resources  
 524 Quantitative Techniques in Natural Resources Research  
 528 Microeconomic Theory  
 529 Game Theory  
 534 Economics of Natural Resources  
 535 Environmental Economics  
 543 Economic Structure of the Fishing Industry  
 576 Econometrics  
 602 Research Methodology  
 624 Dynamic Economic Models  
 628 Advanced Microeconomic Theory I  
 630 Resource Analysis  
 634 Economics of Resource Development  
 676 Advanced Econometrics

677 Econometric Applications in Resource Economics  
**Environmental Sciences (EVS)**  
 101 Freshman Inquiry into Environment and Life Sciences  
 366 Communicating Environmental Research and Outreach  
 610 Multidisciplinary Problem Solving in Coastal Ecosystems  
 612 Leadership and Communication in Coastal Ecosystem and Management  
 614 White Papers in Integrated Coastal Science  
 616 Field Practicum in Coastal Science  
 618 Internship in Coastal Management

**Geosciences (GEO)**  
 100 Environmental Geology  
 103 Understanding the Earth  
 210 Landforms: Origin and Evolution  
 277 Coastal Geologic Environments  
 450 Introduction to Sedimentary Geology  
 482 Innovative Subsurface Remediation Technologies  
 483 Hydrogeology  
 484 Environmental Hydrogeology  
 485 Environmental Engineering Geophysics  
 515 Glacial Geology  
 550 Sedimentary Processes and Environments  
 568 Isotopes in Hydrogeology  
 577 Coastal Geologic Hazards  
 582 Innovative Subsurface Remediation Technologies  
 583 Groundwater Modeling  
 584 Environmental Hydrogeology

**History (HIS)**  
 389 Exploration, Commerce, and Conflict in the Atlantic World, 1415–1815  
 390 The Atlantic World in the Age of Iron, Steam and Steel  
 396 Maritime History/Underwater Archaeology Field School  
 490 Underwater Historical Archaeology

**Kinesiology (KIN)**  
 346 Skin and Scuba Diving, Beginners  
 347 Skin and Scuba Diving, Advanced

**Landscape Architecture (LAR)**  
 101 Freshman Inquiry into Landscape Architecture  
 343, 344 Landscape Architecture Studio I, II  
 444 Landscape Architecture Studio III: Sustainable Design  
 443 Planting Design  
 445 Landscape Architecture Studio IV

**Marine Affairs (MAF)**  
 100 Human Use and Management of the Marine Environment  
 120 New England and the Sea  
 220 Introduction to Marine and Coastal Law  
 312 The Politics of the Ocean  
 320 Shipping and Ports  
 330 World Fishing  
 410 Senior Seminar in Marine Affairs  
 413 Peoples of the Sea

415, 515 Marine Pollution Policy  
 461 Coastal Zone Management  
 465 Island Ecosystem Management  
 472 Marine Recreation and Tourism Management Seminar  
 475 Human Responses to Coastal Hazards and Disasters  
 482 Quantitative Methods in Marine Affairs  
 484 Environmental Analysis and Policy in Coastal Management  
 494 Cases in Marine Policy  
 490 Field Experience in Marine Affairs  
 502 Research Methods in Marine Affairs  
 511 Ocean Uses and Marine Sciences  
 512 Marine Science and Policy Analysis  
 516 Seminar on the Urban Waterfront  
 521 Coastal Zone Law  
 523 Fisheries Law and Management  
 526 Management of Marine Protected Areas  
 527 Marine Protected Areas: An Interdisciplinary Analysis

530 International and Domestic Coastal Area Management Seminar  
 551 Seminar in Marine Ecology  
 544 Water Resources Law  
 562 Admiralty Law  
 563 Maritime Transportation  
 564 Port Operations and Policy  
 565 Cruise Ship Operations, Marketing, and Ports  
 577 International Ocean Law  
 578 International Ocean Organizations  
 582 Coastal Ecosystem Governance  
 586 Environmental Impact Assessment and Analysis  
 602 Federal Ocean Policy and Organization  
 651, 652 Marine Affairs Seminar

**Mechanical Engineering and Applied Mechanics (MCE)**  
 354 Fluid Mechanics  
 415 Experimentation in Fluid Mechanics and Thermal Science  
 551 Fluid Mechanics I

**Microbiology (MIC)**  
 102 Exploring the Microbial World  
 201 Introductory Medical Microbiology  
 211 Introductory Microbiology  
 306 Eukaryotic Microbiology/Protistology  
 413–16 Advanced Microbiology

**Natural Resources Science (NRS)**  
 100 Natural Resource Conservation  
 101 Freshman Inquiry into Natural Resources  
 186 Analysis and Presentation of Environmental Data  
 200 Seminar in Natural Resources  
 212 Introduction to Soil Science  
 301 Introduction to Forest Science  
 302 Fundamentals of Forest Management  
 304 Field Ornithology  
 305 Principles of Wildlife Ecology and Management  
 309 Wildlife Management Techniques Laboratory  
 312 Methods in Soil and Water Analysis  
 324 Biology of Mammals

351 Soil Morphology Practicum	301 Fundamentals of Ocean Mechanics	614 Tides
361 Watershed Hydrology and Management	307 Introduction to Engineering Wave Mechanics	620 Chemical Distributions
395 Research Apprenticeship in Natural Resources Science	and Littoral Processes	623 Physical Chemistry of Seawater
397 Natural Resources Internship	310 Basic Ocean Measurement	625 Organic Geochemistry of Sediments
402 Wildlife Biometrics	311 Coastal Measurements and Applications	628 High-Temperature Geochemistry
403 Wildlife Biometrics Field Investigations	360 Robotic Ocean Instrumentation Design	631 Seminar in Marine and Atmospheric Chemistry
406 Wetland Wildlife	416 Ocean Engineering Professional Practice	640 Marine Particles
407 Nongame and Endangered Species Management	421 Marine Structure Design	643 Subduction Zones
408 Environmental Education: Theory and Experiential Learning	422 Offshore Structure and Foundation	645 Petrology of the Ocean Crust
409 Concepts in GIS	425 Coastal Experiments	652 Marine Geophysics
410 Fundamentals of GIS	471 Underwater Acoustics	661 Phytoplankton Taxonomy
412 Soil-Water Chemistry	472 Sonar Systems Design	663 Phytoplankton Physiology
415 Remote Sensing of the Environment	495, 496 Ocean Systems Design Project I, II	664 Phytoplankton Ecology
423 Wetland Ecology	506 Numerical Models and Data Analysis in Ocean Sciences	665 Marine Bio-Optics and Remote Sensing
424 Wetlands and Land Use	510 Engineering Ocean Mechanics	666 Zooplankton
425, 525 Wetland Field Investigations	514 Engineering Wave Mechanics and Nearshore Processes	668 Productivity of Ocean Margins
426 Soil Microbiology	515 Marine and Vehicle Hydrodynamics	669 Marine Fish Ecology and Production
440 Ecosystem Processes in Land and Water Management	522 Dynamics of Waves and Structures	670 Fish Population Dynamics
441 Methods in Ecosystem Analysis	550 Ocean Systems Engineering	671 Marine Zooplankton Ecology
450 Soil Conservation and Land Use Investigations	560 Introduction to Data Collection Systems	679 Animal Communication
452 Soil, Water, and Land Investigations	561 Introduction to the Analysis of Oceanographic Data	689 Coastal Marine Ecosystems
471 Soil Morphology and Mapping	565 Ocean Laboratory I	695 Seminar in Oceanography
475 Plant Nutrition and Soil Fertility	571, 672 Underwater Acoustics I, II	<b>Philosophy (PHL)</b>
495 Advanced Natural Resources Apprenticeship	572 Underwater Acoustic Transducers	454 Philosophy of the Natural Environment
497 Natural Resources Cooperative Internship	575 Marine Bioacoustics	<b>Physics (PHY)</b>
498 Teaching Practicum in Natural Resources Science	582 Seabed Geotechnics	425 Acoustics
499 Senior Thesis in Natural Resources Science	605, 606 Ocean Engineering Seminar	483, 484 Laboratory and Research Problems in Physics
503 Wildlife Biometrics Field Investigations	661 Analysis of Oceanographic Data Systems	<b>Plant Sciences (PLS)</b>
505 Biology and Management of Migratory Birds	673 Advanced Course in Underwater Acoustic Propagation	150 Plant Biology for Gardeners
509 Concepts of GIS and Applications in Environmental Science	<b>Oceanography (OCG)</b>	200 Introduction to Plant Protection
510 Soil-Water Relations	110 The Ocean Planet	205, 305 Population, Environment, and Plant Biology I, II
516 Advanced Remote Sensing	123 Oceans, Atmospheres, and Global Change	222 Ecology of the Home Landscape
520 Quantitative Techniques in Natural Resource Research	131 Volcanoes and the Environment	306 Landscape Management and Arboriculture
522 Advanced GIS Analysis of Environmental Data	401 General Oceanography	361 Weed Science
524 Application of Advanced Spatial Analysis	451 Oceanographic Science	401, 402 Plant Sciences Seminar
526 Microbial Ecology of Soils and Sediments	480 Introduction to Marine Pollution	405 Propagation of Plant Materials
527 Marine Protected Areas: An Interdisciplinary Analysis	491 Ocean Studies	407 Environmental Education: Theory/Experiential Learning
532 Conservation Biology and Resource Economics	501 Physical Oceanography	436 Floriculture and Greenhouse Crop Production
533 Landscape Pattern and Change	505 Marine Analytical Chemistry	440 Diseases of Turfgrasses, Trees, Shrubs, and Ornamental Shrubs
534 Ecology of Fragmented Landscapes	506 Numerical Models and Data Analysis in Ocean Sciences	441 Plant Disease Laboratory
538 Physiological Ecology of Wild Terrestrial Vertebrates	510 Descriptive Physical Oceanography	442 Advanced Turf Management
551 Seminar in Marine Ecology	517 Foundations in Earth System Dynamics	475 Plant Nutrition and Soil Fertility
555 Applied Coastal Ecology	521 Chemical Oceanography	476 Environmental Plant Physiology
567 Soil Genesis and Classification	523 Organic Geochemistry of Natural Waters	501, 502 Graduate Seminar in Plant Sciences
568 Recent Advances in Natural Resources Science	531 Synoptic and Dynamic Meteorology	512 Plant Growth and Development
600 Graduate Seminar in Natural Resources	533 Graduate Writing in Marine and Environmental Sciences	572 Plant Biochemistry
<b>Ocean Engineering (OCE)</b>	535 Climate, Radiation, Gases, and Aerosols	576 Environmental Plant Physiology
101 Introduction to Ocean Engineering	540 Geological Oceanography	<b>Political Science (PSC)</b>
205 Ocean Engineering Design Tools	561 Biological Oceanography	402 Environmental Policy and Politics
206 Ocean Instrumentation	574 Biology of Marine Mammals	<b>Statistics (STA)</b>
215, 216 Ocean Engineering Design I, II	576 Marine Microbial Ecology	413 Data Analysis
	580 Introduction to Marine Pollution	550 Ecological Statistics
	605 Dynamical Oceanography	
	610, 611 Geophysical Fluid Dynamics I, II	
	613 Waves	

*Special Problems, Directed Study, Independent Study, Workshop, and/or Internships are also offered by most marine and environmental departments.*

## Master of Science in Accounting (MAC)

*Director:* Professor Schwarzbach

### 501 Current Accounting Theory (3)

Critical examination of accounting theory and practice to develop research techniques with emphasis on financial accounting. (Lec. 3) Pre: graduate standing in accounting or permission of M.S. in accounting director.

### 502 Current Accounting Theory (3)

Critical examination of accounting theory and practice with respect to cost and managerial accounting. (Lec. 3) Pre: graduate standing in accounting or permission of M.S. in accounting director.

### 503 Taxation of Corporations and Shareholders (3)

Examination of the tax laws affecting corporations and shareholders. Includes law governing corporate formation, liquidating and no liquidating distributions, reorganizations, taxes on corporation accumulations, and planning of transactions for tax compliance and minimization. (Lec. 3) Pre: BUS 403 or permission of instructor.

### 504 Financial Statement Analysis and Reporting (3)

Development of accounting policy with respect to analysis of financial statements and the use of evaluation techniques, managerial planning and control. Emphasis on analytical evaluation of cases with major research project. (Lec. 3) Pre: graduate standing in accounting or permission of M.S. in accounting director.

### 505 Advanced Problems in Accounting (3)

Integrative and specialized accounting problems. (Lec. 3). Graduate standing in accounting or permission of M.S. in accounting director.

### 506 Seminar in Tax Research, Policy, and Planning (3)

Examination of the methodology of tax research, the principles and procedures involved in tax planning, and the procedures involved in dealing with the IRS. (Seminar) Pre: BUS 403 or MAC 510 or equivalent.

### 507 International Accounting (3)

Covers interpretation of international financial statements, focusing on foreign currency exchange, comparative accounting principles and disclosures, and audit reports. Uses actual financial statements in case analysis. (Lec. 3) Pre: MBA 503 or permission of instructor.

### 508 Advanced Auditing (3)

Statements on auditing standards, auditing electronic systems, auditors' reports, statistical sampling in auditing, regulations of SEC, and cases in auditing. (Lec. 3) Pre: BUS 404.

### 509 Taxation of Flow Through Entities (3)

Examines the federal income tax laws applicable to the flow through entities of partnerships and S corporations. (Lec. 3) Pre: BUS 403.

### 510 Federal Taxes and Business Decisions (3)

The course focuses on tax law and its effect on business decisions. Cases are employed and primary emphasis is on income tax planning, although estate and gift taxes are explored. (Lec. 3) Pre: MBA 503.

### 518, 519 Directed Study in Accounting (1-3 each)

Advanced work under the supervision of a faculty member and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

### 520 Internship in Accounting (3)

Participation in management and/or problem solving under the supervision and guidance of a sponsoring agency with evaluation by the College of Business Administration. (Practicum) Pre: proposal acceptance by the College of Business Administration, no previous internship credit, graduate standing. S/U credit.

## Master's in Business Administration (MBA)

*Associate Deans:* Professors Chen and Rosen

### 500 Statistical Methods for Management (3)

Introductory statistical methods applied to business problems. Topics include descriptive statistics, probability, distributions, inference, regression analysis, chi-square analysis, and introduction to time series. (Lec. 3) Graduate credit for students matriculated in the M.B.A. and M.S. in accounting programs only.

### 501 Computing for Management (2-3)

Computer concepts and programming using spreadsheet, database, presentation, communication, and other software packages. Emphasis on PC computing as an administrative and analytic tool for applications in management. (Lec. 2-3)

### 502 Organizational Behavior (3)

Examination of the theory, research, and practice of organizational behavior in work settings, focusing on individual differences, communications, group dynamics, motivation, and leadership in the workplace. (Lec. 3)

### 503 Financial Accounting (3)

Covers basic accounting principles, accounting systems design, and financial reporting issues. Focusing on financial statement analysis techniques necessary to accurately assess a company's financial position and results of operations. (Lec. 3) Pre: 500 and 506.

### 504 Financial Management (3)

Functions and responsibilities of financial managers. Examination of financial statement analysis, cost of capital, capital structure, valuation, markets, capital

budgeting, working capital, mergers, bankruptcy, multinational finance. (Lec. 3) Pre: 500, 503, 506 (or equivalent), ECN 590.

### 505 Managerial Marketing (3)

Analysis of marketing problems and determination of marketing policies in product development, promotion, pricing, channel selection, legal aspects. (Lec. 3) Pre, 500, 506 or permission of instructor.

### 506 Mathematical Methods for Management (3)

Fundamental mathematical methods applied to the understanding and solution of managerial problems. Topics include the solution of systems of linear equations, differential calculus, and related areas. (Lec. 3) Graduate credit for students matriculated in the M.B.A. and M.S. in accounting programs only.

### 510 Managerial Accounting (3)

Determination of accounting information for the purposes of decision making, control, and evaluation with emphasis on decision models using accounting information. (Lec. 3) Pre: 500, 503, 506.

### 520 Quantitative Methods for Management (3)

Survey of principal operations research/management science models. Linear programming, network, and other mathematical programming models; simulation, decision analysis, and other probabilistic models. (Lec. 3) Pre: 500, 501, and 506 or waiver examinations.

### 530 Legal Environment of Business (3)

Coverage includes both substantive and procedural rules of law in the civil and administrative law field with emphasis on business, regulation, societal, and ethical issues. (Lec. 3) Pre: graduate standing.

### 540 Organizational Decision Making and Design (3)

Theory and skills development in strategic thinking and organizational design; use of critical analysis in the diagnosis of organizational and management problems. (Lec. 3) Pre: graduate standing.

### 550 Managing with Information Resources (3)

Concepts of information technologies and systems as they relate to the information-age organization. Major focus is on how the various information resources can be managed to facilitate organizational effectiveness. Topics include information and communication technologies, decision support and information systems, technology-enabled process re-engineering, and information architecture. (Lec. 3) Pre: 501 or permission of instructor.

### 555 Managerial Economics (3)

The applications of economic theory and methodology to business problems. (Lec. 3) Pre: 504, 520, 550, and 560 or permission of instructor.

**560 Operations and Supply Chain Management (3)**

The management of manufacturing and service operations. Topics include flow processes, inventories, scheduling, capacity, and operations strategy. (Lec. 3) Pre: 500, 501, 520.

**565 Strategic Management (3)**

Case studies of management problems and evaluation of alternative solutions by integrating functional areas of business. Discussion of ethical, social, and regulatory environments in domestic and multinational firms. Includes the M.B.A. written comprehensive examination. (Lec. 3) Service learning. Pre: all MBA 500 first level courses or equivalent and a minimum of 21 MBA credits, which must include 502, 503, 504, and 505, or permission of instructor.

**566 Security and Investment Analysis (3)**

Analysis of the problems of investing funds and managing investments. Use of the latest investment theories and their implementation via quantitative techniques will be explored. (Lec. 3) Pre: 504 or equivalent.

**567 Advanced Portfolio Theory and Security Analysis (3)**

An examination of advanced theories and practices in portfolio building and maintenance. Issues related to security price behavior are also examined. (Seminar) Pre: 504 or equivalent.

**568 Advanced Financial Theory (3)**

Analysis of the theoretical framework for corporate decision making related to financial planning, capital budgeting decisions, dividend policy, and capital structure decisions. Emphasis on current research developments. (Seminar) Pre: 504 or equivalent.

**569 Advanced International Financial Management (3)**

Analysis of issues relevant to the international financial manager. The financial operations of multinational enterprises are examined through both the theoretical and the case approach. (Seminar) Pre: 504 or equivalent.

**571 Labor Relations and Human Resources**

See Labor Relations 500.

**572 Human Resource Strategy**

See Labor Relations 551

**574 Consulting and Management Practice (3)**

Review of the theory and practice of effective consulting and development of consultation skills. (Practicum) Pre: 502 or permission of instructor.

**575 Seminar in Management (3)**

Class discussion of typical cases, original research work in the field of management with discussion of data collected and analyzed by individual students. (Seminar) Pre: permission of dean.

**576 Advanced Topics in Management (3)**

Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. (Seminar) Pre: permission of dean.

**577 Compensation Administration (3)**

Compensation and performance appraisal systems. Theory and techniques used to determine job worth. Special issues in compensation management, such as relating pay to performance through appraisal techniques and pay compression. (Lec. 3) Pre: MBA 502 or permission of instructor.

**578 Human Resource Development (3)**

Techniques used in procurement and development of human resource. Planning through recruitment, selection, and placement to training and development. Integration of HRD process with organizational strategic plans. (Lec. 3) Pre: 502 or permission of instructor.

**579 International Business Management (3)**

Examines the problems and characteristics of international management by focusing on the role of the multinational corporation in a cross-cultural setting. (Lec. 3) Pre: 502 or permission of instructor.

**580 Management Systems Analysis and Design (3)**

An overview of systems analysis and design, and its role in the development of information systems. Major focus is on the methodologies, techniques, and tools used to create successful information systems. (Lec. 3) Pre: 550 or permission of instructor.

**581 Database Management Systems (3)**

Design and analysis of complex multi-user databases used in real time business transaction processing. The class will contain discussion and examination of databases for strategic and tactical purposes. (Lec. 3)

**582 Applied Time Series Methods and Business Forecasting (3)**

Study of time series methods. Construction and use of autoregressive integrated moving averages (ARIMA) forecasting models. Applications to strategic decision actions. (Lec. 3) Pre: 500 or permission of instructor.

**583 Seminar in Operations and Supply Chain Management (3)**

Preparation and presentation of papers on selected topics in operations management and supply chain issues. (Seminar) Pre: 560.

**584 Buyer Behavior (3)**

Analysis of major factors influencing the behavior and demand of consumers. Emphasis on using these factors to identify and segment target markets and to assess the effects of these factors on markets. (Lec. 3) Pre: 505 or permission of instructor.

**585 Marketing Research (3)**

Marketing information needs and appropriate means of providing the requisite information are analyzed. Several major marketing decision areas and their research implications are examined in depth. (Lec. 3) Pre: 500, 505, 506, ECN 590, or permission of instructor.

**586 International Marketing Management (3)**

Marketing policy making for the multinational firm; organizing for international marketing; its opportunities, pricing, channels, promotion, and research. (Lec. 3) Pre: 505 or permission of instructor.

**587 Product Management (3)**

Development of product policies and strategies. Emphasis on organizing the marketing function to deal with various product-related activities including new product development, life cycle strategies, and product deletion. (Lec. 3) Pre: 505 or permission of instructor.

**591, 592 Directed Study in Business (1-3 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor.

**593, 594 Internship in Business Administration (3)**

Participation in business administration under the field supervision of a sponsoring organization with evaluation by the College of Business Administration. (Independent Study) Pre: proposal approved by the College of Business Administration. S/U credit.

**Mathematics (MTH)**

*Chairperson: Professor Pakula*

**010 Basic Math (3)**

Real numbers; operation with fractions and decimals. Proportions and related problems. Basic algebra: solving first-degree equations and systems of equations. Applications. (Lec. 3) S/U only. Credits may not be used toward the minimum credits required for graduation or for general education.

**099 Basic Algebra and Trigonometry (3)**

Review of basic algebra and trigonometry: operations of real numbers and algebraic expressions, negative and fractional exponents, polynomials and fractional expressions, equations and systems of equations, inequalities, right triangle trigonometry and applications. (Lec. 3) For students not sufficiently prepared to take other mathematics courses. Credits may not be used toward the minimum credits required for graduation or for general education. S/U only.

**107 Introduction to Finite Mathematics (3)**

Concepts and processes of modern mathematics concerned with sets, the theory of probability, and statistics. Role of these concepts in today's social and

physical sciences. (Lec. 3) Pre: passing a placement test. Not open to mathematics majors. (MQ)

#### **108 Topics in Mathematics (3)**

Introduces the nonmathematics student to the spirit of mathematics and its applications. Presupposes no mathematical background beyond University admission requirements. Emphasis is on development of reasoning ability as well as manipulative techniques. (Lec. 3) Pre: passing a placement test. Not open to mathematics majors. (MQ)

#### **109 Politics and Mathematics**

See Political Science 109. (MQ)

#### **110 Mathematical Foundations for Business Analysis (3)**

Equations of first and second degree. Inequalities. Exponential and logarithmic functions. Emphasis on business applications. Introduction to linear algebra and matrices. Introduction to spreadsheets. Designed for students who want to strengthen their background in math before BAC 120. (Lec. 3). Not for credit for mathematics majors and not for general education credit.

#### **111 Precalculus (3)**

Equations of first and second degree, systems of equations. Inequalities. Functions and graphs. Exponential, logarithmic, and trigonometric functions. Applications. Introduction to analytic geometry. Complex numbers. Designed for students who need to strengthen their background in mathematics below calculus. (Lec. 3) Pre: passing a placement test. Not for credit for mathematics majors. (MQ)

#### **131 Applied Calculus I (3)**

Basic topics in calculus for students who do not need all the topics in 141. Limits, derivatives, and integrals of algebraic, logarithmic, and exponential functions. Applications including graphing, maxima and minima problems, etc. (Lec. 3) Pre: passing a placement test. Not for major credit in mathematics. Not open to students with credit or concurrent enrollment in 141. (MQ)

#### **132 Applied Calculus II (3)**

Continuation of 131. Topics related to trigonometric functions, integration by parts and partial fractions, partial derivatives, infinite series. Applications to problems such as optimization, probability theory, simple differential equations. (Lec. 3) Pre: 131 or 141 or permission of chairperson. Not for major credit in mathematics. Not open to students with credit or concurrent enrollment in 142.

#### **141 Introductory Calculus with Analytic Geometry (4)**

Topics in analytic geometry, functions and their graphs, limits, the derivative, applications to finding rates of change and extrema and to graphing, the integral, and applications. (Lec. 3, Rec. 1) Completion of four units of high school mathematics, in-

cluding trigonometry, recommended. Pre: passing a placement test. Not open to students with credit or concurrent enrollment in 131. (MQ)

#### **142 Intermediate Calculus with Analytic Geometry (4)**

Continues the study of calculus for the elementary algebraic and transcendental functions of one variable. Topics include the technique of integration, improper integrals, indeterminate forms, and calculus using polar coordinates. (Lec. 3, Rec. 1) Pre: 141 or permission of chairperson. Not open to students with credit or concurrent enrollment in 132.

#### **208 Mathematics for Elementary School Teachers (3)**

Selected topics in mathematics central to the elementary school curriculum, including problem solving, number systems, functions and relations, probability and statistics, and geometry. (Lec. 3) Pre: admission to elementary education program and prior completion of general education mathematics requirement. Not open to mathematics majors or mathematics education majors.

#### **215 Introduction to Linear Algebra (3)**

Detailed study of finite dimensional vector spaces, linear transformations, matrices, determinants, and systems of linear equations. (Lec. 3) Pre: 131, 141, or equivalent.

#### **243 Calculus for Functions of Several Variables (3)**

Topics include coordinates for space, vector geometry, partial derivatives, directional derivatives, extrema, Lagrange multipliers, and multiple integrals. (Lec. 3) Pre: 142.

#### **244 Differential Equations (3)**

Classification and solution of differential equations involving one independent variable. Applications to the physical sciences. Basic for further study in applied mathematics and for advanced work in physics and engineering. (Lec. 3) Pre: 243.

#### **307 Introduction to Mathematical Rigor (3)**

Introduction to the language of rigorous mathematics: logic, set theory, functions and relations, cardinality, induction, methods of proof. Emphasis on precise written and oral presentation of mathematical arguments. (Lec. 3) Pre: 141.

#### **316 Algebra (3)**

Theory and structure of groups. Topics from ring theory, principal ideal domains, unique factorization domains, polynomial rings, field extensions, and Galois theory. (Lec. 3) Pre: 215 and 307.

#### **322 Concepts of Geometry (3)**

Survey of geometrical systems including non-Euclidean, affine, and projective spaces and finite geometries. A modern view of Euclidean geometry using both synthetic and analytic methods. (Lec. 3) Pre: 215 or permission of instructor.

#### **362 Advanced Engineering Mathematics I (3)**

Algebra of complex numbers, matrices, determinants, quadratic forms. Linear differential equations with constant coefficients. Partial differential equations. (Lec. 3) Pre: 142. Not for major credit in mathematics.

#### **363 Advanced Engineering Mathematics II (3)**

Laplace and Fourier transforms. Analytic functions. Cauchy's theorem and integral formula. Power series in the complex domain. Laplace and Fourier inverse integrals. Introduction to probability. (Lec. 3) Pre: 362 or equivalent. Not for major credit in mathematics.

#### **381 History of Mathematics (3)**

General survey course in development and philosophy of mathematics. Provides a cultural background and foundation for advanced study in various branches of the subject. (Lec. 3) Pre: 142 or equivalent.

#### **382 Number Theory (3)**

Some of the arithmetic properties of the integers including number theoretic functions, congruences, diophantine equations, quadratic residues, and classically important problems. (Lec. 3) Pre: 141 or permission of instructor.

#### **391 Special Problems (1-3)**

Advanced work under the supervision of a faculty member and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.

#### **393 Undergraduate Seminar (1)**

Preparation and presentation of selected topics in oral and written form. (Seminar) Pre: permission of chairperson.

#### **418 Matrix Analysis (3)**

Canonical forms, functions of matrices, characteristic roots, applications to problems in physics and engineering. (Lec. 3) Pre: 215 or 362 or permission of instructor.

#### **420 Re-examining Mathematical Foundations for Teachers (3)**

Connects ideas covered in upper level math courses to topics taught in secondary school. Designed for teachers. (Lec. 3) Pre: 316 or permission.

#### **425 Topology (3)**

Abstract topological spaces and continuous functions. Generalizations of some classical theorems of analysis. (Lec. 3) Pre: 243 and 307, or permission of instructor or chairperson.

#### **435 Introduction to Mathematical Analysis I (3)**

Sets and functions, real topology, continuity and uniform continuity, derivatives, the Riemann integral, improper integrals. Detailed proofs emphasized. (Lec. 3) Pre: 243; 307 is strongly recommended.

**436 Introduction to Mathematical Analysis II (3)**  
Sequences and series of functions, implicit and inverse function theorems, topology of Euclidean space, transformation of multiple integrals. Detailed proofs emphasized. (Lec. 3) Pre: 435.

**437, 438 Advanced Calculus and Application I, II (3 each)**

Sequences, limits, continuity, differentiability, Riemann integrals, functions of several variables, multiple integrals, space curves, line integrals, surface integrals, Green's theorem, Stokes' theorem, series, improper integrals, uniform convergence, Fourier series, Laplace transforms. Applications to physics and engineering emphasized. (Lec. 3) Pre: (for 437) 243 and credit or concurrent enrollment in 215 or 362. Pre: (for 438) 437.

**441 Introduction to Partial Differential Equations (3)**

One-dimensional wave equation. Linear second order partial differential equations in two variables. Separation of variables and Fourier series. Nonhomogeneous boundary value problems. Green's functions. (Lec. 3) Pre: 244 or 442.

**442 Introduction to Difference Equations (3)**

Introduction to linear and nonlinear difference equations; basic theory, z-transforms, stability analysis, and applications. (Lec. 3) Pre: 243.

**444 Ordinary Differential Equations (3)**

Introduction to fundamental theory of ordinary and functional-differential equations. Series and numerical methods. Topics from stability, periodic solutions, or boundary-value problems. Applications to physics, engineering, biology. (Lec. 3) Pre: 244 or 362 or 442.

**447 (or CSC 447) Discrete Mathematical Structures (3)**

Concepts and techniques in discrete mathematics. Finite and infinite sets, graphs, techniques of counting, Boolean algebra and applied logic, recursion equations. (Lec. 3) Pre: junior standing or better in physical or mathematical sciences, or in engineering, or permission of instructor.

**451 Introduction to Probability and Statistics (3)**

Theoretical basis and fundamental tools of probability and statistics. Probability spaces, properties of probability, distributions, expectations, some common distributions, and elementary limit theorems. (Lec. 3) Pre: 243 or equivalent.

**452 Mathematical Statistics (3)**

Continuation of 451 in the direction of statistics. Basic principles of statistical testing and estimation, linear regression and correlation. (Lec. 3) Pre: 451.

**456 Introduction to Random Processes (3)**

Conditional probability and expectation. Mean and covariance functions. Calculus of random processes. Introduction to Gaussian processes, Poisson processes, stationary processes, and Markov chains with applications. (Lec. 3) Pre: 451 or equivalent.

**461 Methods of Applied Mathematics (3)**

Topics selected from vector analysis, elementary complex analysis, Fourier series, Laplace transforms, special functions, elementary partial differential equations. Emphasis on development of techniques rather than mathematical theory. (Lec. 3) Pre: 244 or 362 or 442.

**462 Functions of a Complex Variable (3)**

First course in the theory of functions of a single complex variable, including analytic functions, power series, residues and poles, complex integration, conformal mapping, and applications. (Lec. 3) Pre: 243 or equivalent.

**464 Advanced Engineering Mathematics III (3)**

Topics from Fourier series and integrals. Partial differential equations and boundary value problems. Bessel functions and Legendre polynomials. Conformal mappings. (Lec. 3) Pre: 362 and 363 or permission of instructor. Not for graduate credit in mathematics.

**471 Introduction to Numerical Analysis I (3)**

Interpolation, solution of nonlinear equations, numerical evaluation of integrals, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor.

**472 Introduction to Numerical Analysis II (3)**

Numerical solution of ordinary differential equations, systems of linear equations, least squares, approximation, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor.

**492 Special Problems (1-3)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.

**513 Linear Algebra (3)**

Linear spaces and transformations, linear functionals, adjoints, projections, diagonalization, Jordan form of matrices, inner products; positive, normal, self-adjoint, and unitary operators; spectral theorem, bilinear and quadratic forms. (Lec. 3)

**515, 516 Algebra I, II (3 each)**

Groups, rings, modules, commutative algebra. (Lec. 3) Pre: 316. In alternate years.

**525 Topology (3)**

Topological spaces, separation properties, connectedness, compactness, uniformities. Function spaces, spaces of continuous functions, and complete spaces. (Lec. 3) Pre: 425 or equivalent. In alternate years.

**535, 536 Measure Theory and Integration (3 each)**

Elements of topology and linear analysis. Lebesgue measure and integration in  $\mathbb{R}$ , in  $\mathbb{R}^n$ , and in abstract spaces. Convergence theorems. Bounded variation, absolute continuity, and differentiation. Lebesgue-Stieltjes integral. Fubini and Tonelli theorems. The classical Banach spaces. (Lec. 3) Pre: 435.

**545, 546 Ordinary Differential Equations I, II (3 each)**

Existence and uniqueness theorems. Continuous dependence on parameters and initial conditions. Singularities of the first and second kinds, self-adjoint eigenvalue problems on a finite interval. Oscillation and comparison theorems. Introduction to delay and difference equations. Elements of stability theory of Lyapunov's second method. (Lec. 3) Pre: 435. In alternate years.

**547 (or CSC 547) Combinatorics and Graph Theory (3)**

Enumeration: generating functions, recurrence relations, classical counting numbers, inclusion-exclusion, combinatorial designs. Graphs and their applications: Euler tours, Hamilton cycles, matchings and coverings in bipartite graphs, the four-color problem. (Lec. 3) Pre: 215 or equivalent. In alternate years.

**548 (or CSC 548) Topics in Combinatorics (3)**

Topics such as Ramsey theory, Polya theory, network flows and the max-flow-mincut variations, applications in operations research; finite fields and algebraic methods; block designs, coding theory, other topics. (Lec. 3) Pre: 547 or permission of instructor. In alternate years.

**550 Probability and Stochastic Processes (3)**

Review of probability theory. Generating functions, renewal theory, Markov chains and processes, Brownian motions, stationary processes. (Lec. 3) Pre: 437 or 435 and 451, or permission of instructor. In alternate years.

**551 Mathematical Statistics (3)**

Theory of estimation and hypothesis testing. Large sample methods. Regression and analysis of variance. (Lec. 3) Pre: 437 or 435 and 451, or permission of instructor. In alternate years.

**561 Advanced Applied Mathematics (3)**

Linear spaces, theory of operators. Green's functions, eigenvalue problems of ordinary differential equations. Application to partial differential equations. (Lec. 3)

**562 Complex Function Theory (3)**

Rigorous development of theory of functions. Topology of plane, complex integration, singularities, conformal mapping. (Lec. 3) Pre: 435 and 436 or 437 and 438 and permission of instructor. In alternate years.

**572 Numerical Analysis (3)**

Further numerical methods of solution of simultaneous equations, partial differential equations, integral equations. Error analysis. (Lec. 3)

**575 Approximation Theory and Applications to Signal Processing**

See Electrical Engineering 575.

**591, 592 Special Problems (1-3 each)**

Advanced work under the supervision of a member of the department arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**629, 630 Functional Analysis I, II (3 each)**

Banach and Hilbert spaces, basic theory. Bounded linear operators, spectral theory. Applications to analysis. Application to a special topic such as differential operators, semigroups and abstract differential equations, theory of distributions, or ergodic theory. (Lec. 3) Pre: 536 or permission of instructor.

**641 Partial Differential Equations I (3)**

First order systems. The Cauchy-Kowalewsky theorem. The Cauchy problem. Classification of partial differential equations. Hyperbolic equations. Mainly the theory of the subject. Students interested in techniques for the solution of standard equations should take 441. (Lec. 3) Pre: 215, 435, and 462. In alternate years.

**642 Partial Differential Equations II (3)**

Elements of potential theory. Elliptic equations. Green's function. Parabolic equations. Introduction to the theory of distributions. (Lec. 3) Pre: 641. In alternate years.

**691, 692 Special Topics I, II (3 each)**

Advanced topics of current research in mathematics will be presented with a view to expose the students to the frontiers of the subject. (Independent Study) Pre: permission of chairperson.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**930 Workshop in Mathematics Topics for Teachers (0-3)**

Especially designed for teachers of mathematics. Basic topics of mathematics from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Not for degree credit.

## **Mechanical Engineering and Applied Mechanics (MCE)**

*Chairperson: Professor Shukla*

**201 Graphics for Mechanical Engineering (3)**

Introduction to the principles of graphic representation in mechanical design, with emphasis on computer-aided drafting, orthographic projection, isometric and auxiliary views, sections, dimensioning. (Lec. 2, Lab. 3)

**262 Statics (3)**

Newton's laws of force systems in equilibrium and their effects on particles, systems of particles, and rigid bodies. Both scalar and vector methods of analysis are developed. (Lec. 3) Pre: MTH 141 and credit or concurrent enrollment in EGR 106.

**263 Dynamics (3)**

Kinematic and kinetic study of motion of particles, systems of particles, and rigid bodies, acted upon by unbalanced force systems, using both scalar and vector methods; development of methods of analysis based on the direct application of Newton's laws, work-energy, and impulse-momentum principles. (Lec. 3) Pre: 262.

**301 Application of Mechanics in Design (3)**

Concepts of engineering design, material selection, failure theories, fracture and fatigue, and finite-element analysis. Application to the design of mechanical components such as shafts, bolts, welded joints, and springs. (Lec. 3) Pre: CVE 220.

**302 Design of Machinery (3)**

Analysis and design of mechanisms and machine elements including linkages, gear trains, cam-follower systems, bearings, brakes and clutches, flexible mechanical elements, and intermittent and other devices. Graphical, analytical, and computer-aided synthesis techniques. (Lec. 3) Pre: 201 and 263 and 301.

**313 Introduction to Mechanical Engineering Experimentation (3)**

Report writing, computer-assisted data acquisition and control, statistical and other measures of data uncertainty, propagation of uncertainty, curve fitting. Introduces basic instrumentation for measuring pressure, temperature, velocity, and strain. (Lec. 2, Lab. 3) Pre: CVE 220 and 341 and 354.

**341 Fundamentals of Thermodynamics (3)**

Basic principles and laws of thermodynamics and their relation to pure substances, ideal gases, and real gases. Use of thermodynamic property tables. Development of concepts of reversibility and availability. First and Second Law application to engineering systems; power and refrigeration cycles. (Lec. 3) Pre: 263, MTH 243, and credit or concurrent enrollment in PHY 205.

**354 Fluid Mechanics (3)**

Physical properties of fluids, development of continuity, energy, and momentum concepts using vector methods; application to problems involving viscous and nonviscous fluids including boundary layer flows, flows in closed conduits and around immersed bodies. (Lec. 3) Pre: 263 and MTH 243.

**366 System Dynamics (3)**

Systems analysis emphasizing control and vibration. Time and frequency domain techniques. Modeling of typical mechanical, hydraulic, pneumatic, and thermal systems. Transfer functions and block diagram methods. Elementary control laws. (Lec. 3) Pre: 263 and MTH 244.

**372 Engineering Analysis I (3)**

Application of advanced mathematical methods and computer software to solution of mechanical engineering problems with emphasis on the techniques of engineering analysis. (Lec. 3) Pre: EGR 106, MTH 244, and junior standing.

**401 Mechanical Engineering Capstone Design I (3)**

Application of engineering skills using a team-based approach. Design process methodology and communication of solutions to real-world engineering problems. First of a two-course sequence. (Lec. 2, Lab. 3) Pre: 302 and 366 and 448 and CHE 333 and IME 240. Must be taken in the semester prior to 402. Not for graduate credit.

**402 Mechanical Engineering Capstone Design II (3)**

Application of engineering skills using a team-based approach. Design process methodology and communication of solutions to real-world engineering problems. Second of a two course sequence. (Lec. 2, Lab. 3) Pre: 401. Must be taken in the semester following 401. Not for graduate credit.

**414 Mechanical Engineering Experimentation (3)**

Course aims to build on foundation from 313 and to apply experimental tools to topics from the two main emphasis areas in the undergraduate curriculum, mechanical systems and thermal systems. (Lec. 2, Lab. 3) Pre: 313 and concurrent registration in 448. Not for graduate credit.

**426 Advanced Mechanics of Materials (3)**

Introduction to continuum mechanics: stress, strain and deformation, constitutive equations. Theories of failure. Shear center and unsymmetrical bending of beam. Curved beams. Energy method. Torsion. (Lec. 3) Pre: 301.

**431 Computer Control of Mechanical Systems (3)**

Use of computers to control mechanical systems. Advanced control algorithms. Computer-aided design methods. Digital control algorithms and software implementation. Interfacing and digital controller hardware. (Lec. 3) Pre: 366.

**433 Mechantronics (3)**

Design of microprocessor-controlled electro-mechanical systems. Topics covered include: real-time programming, motion control elements, interfacing of sensors and actuators, basic electronics, and microprocessor architecture. Pre: 366 and ELE 220 or permission of instructor.

**434 Heating, Ventilation, and Air Conditioning (3)**

Application of the principles of thermodynamics and heat transfer to environmental problems. Topics will include thermal control of living spaces, solar heating and cooling, heat pumps, minimum energy consumption. (Lec. 3) Pre: 341.

**437 Turbomachinery Design (3)**

Application of the principles of thermodynamics and fluid mechanics to the design of rotating machinery such as turbines, compressors, centrifugal and axial flow pumps. (Lec. 3) Pre: 341 and 354.

**438 Internal Combustion Engines (3)**

Principles, design, and operation of internal combustion engines, including cycles, combustion, fuels, detonation, carburetion, cooling, supercharging, ignition, friction, and lubrication. Gasoline and diesel, two- and four-stroke cycles, and performance of various engines including the Wankel rotary. (Lec. 3) Pre: 341.

**439 Applied Energy Conversion (3)**

Modern power systems including steam and gas turbines, nuclear power stations, fuel cells, and thermionic and thermoelectric devices. (Lec. 3) Pre: 448 or permission of instructor.

**440 Mechanics of Composite Materials (3)**

Introduction to the basic concepts of the mechanical behavior of composite materials. Analysis and performance of fiber-reinforced composites. Special design considerations and experimental characterization of composites. (Lec. 3) Pre: 314 and CVE 220, or permission of instructor.

**446 Metal Deformation Processes**

See Industrial and Systems Engineering 446.

**448 Heat and Mass Transfer (3)**

Transfer of heat by conduction, convection, and radiation in steady and unsteady states. Theory and application of dimensional analysis; heat and mass transfer in equipment such as heat exchangers and steam condensers. (Lec. 3) Pre: 341 and 354 and 372. Not for graduate credit.

**449 Product Design for Manufacture**

See Industrial and Systems Engineering 449.

**454 Tribology (3)**

Introductory course on the basic principles of tribology (friction, wear, lubrication); fundamentals of surface contact; friction theories; wear mechanisms; temperature considerations in sliding contacts; lubri-

cation regimes; materials selection; design of bearings; advanced applications; experimental analysis. (Lec. 3) Pre: CVE 220 and MCE 354.

**455 Advanced Fluid Mechanics (3)**

Continuation of 354. Selected topics in advanced fluid mechanics including potential flows, compressible flow, fluid machinery, and electric and magnetic field effects. (Lec. 3) Pre: 354.

**464 Vibrations (3)**

Elementary theory of mechanical vibrations, including the one-degree-of-freedom system, multimass systems, vibration isolation, torsional vibration, beam vibration, critical speeds, and vibration instruments. (Lec. 3) Pre: 366 or permission of instructor.

**465 Experimental Mechanics (3)**

Theory and application of various experimental techniques used in solid mechanics such as acoustic emission, holography, interferometry, strain gauges, brittle coatings, and photoelasticity. (Lec. 2, Lab. 3) Pre: 314 and CVE 220.

**466 Introduction to Finite Element Method (3)**

Application of the finite element method to problems in mechanical engineering including plane elasticity, heat transfer, and fluid mechanics. Basic concepts, matrix formulation, interpolation functions, basic element types, and implementation to problem solution. (Lec. 3) Pre: 301 and 372.

**491, 492 Special Problems (1-6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Not for graduate credit.

**501, 502 Graduate Seminar (1 each)**

Seminars and discussions presented by faculty members of academia and industry. Attendance is required of all students in graduate residence. (Seminar) S/U credit.

**503 Linear Control Systems**

See Electrical Engineering 503.

**504 Optimal Control Theory**

See Electrical Engineering 504.

**523 Advanced Kinematics I (3)**

Analytical kinematic and dynamic analysis of planar mechanisms, graph theory, topological synthesis, topological analysis, Burmester theory, mechanism design software. (Lec. 3) Pre: 302 or equivalent.

**530 Real-Time Monitoring and Control (3)**

Fundamentals of the development of real-time software for monitoring and control. Synchronous programming, timing, interrupt programming, operator's console control, and scheduling. Laboratory exercises. (Lec. 3) Pre: graduate standing or permission of instructor.

**532 Precision Machine Design (3)**

Fundamentals of design and the integration of precision mechanical components and machines. Quasi-static and dynamic errors, sensors, contact and noncontact bearings, power generation devices, and system integration. (Lec. 3) Pre: 401 or graduate standing.

**541 Advanced Thermodynamics I (3)**

Advanced study of classical thermodynamics with emphasis on basic concepts, laws, and thermodynamic relationships. Selected topics of current interest including areas of irreversible thermodynamics, statistical mechanics, and the thermodynamics of solids. (Lec. 3) Pre: 341 or permission of instructor.

**545 Heat Transfer (3)**

Conduction in two and three dimensions and conducting systems with radiation and fluid motion. Solutions obtained by mathematics, computer-numerical methods, and analog devices. (Lec. 3) Pre: 448.

**546 Convection Heat Transfer (3)**

Relationship between heat transfer and fluid flow with emphasis on the solution of governing equations by exact methods, integral methods, and similarity techniques. (Lec. 3) Pre: 448.

**549 Advanced Product Design for Manufacture**

See Industrial and Systems Engineering 549.

**550 Theory of Continuous Media (3)**

Foundations for advanced studies in mechanical and thermal behavior of solids and fluids. Cartesian and general tensors, small and large deformation theory, Cauchy and Piola-Kirchhoff stress, conservation principles, constitutive laws with applications to materials of engineering interest. (Lec. 3) Pre: CVE 220, MCE 354, 372 or equivalent.

**551 Fluid Mechanics I (3)**

Basic treatment of real fluid flows using the continuum mechanics approach. Exact solutions of the governing equations. Laminar shear flows and boundary layer theory, turbulent transition. (Lec. 3) Pre: 354 or equivalent.

**552 Advanced Experimental Methods (3)**

Theory and application of various experimental techniques used in fluid mechanics, solid mechanics, and tribology. Emphasis on mechanical and chemical methods of wear detection, and strain and optical techniques of stress evaluation. (Lec. 2, Lab. 3) Pre: MCE 354 and CVE 220 or permission of Instructor.

**561 Computational Methods in Solid Mechanics (3)**

Finite and boundary element methods based on variational and weighted residual concepts implementation to static and dynamic field problems in elasticity, plasticity, and heat conduction. Pre: 466 and 571 or permission of instructor.

**562 Computational Methods in Fluid Flow and Heat Transfer (3)**

Computational techniques and applications for practical problems concerning multidimensional fluid flow, heat and mass transfer, and chemical reactions. (Lec. 3) Pre: undergraduate work in fluid mechanics and heat transfer or permission of instructor.

**563 Advanced Dynamics (3)**

Newtonian mechanics, motion in rotating coordinate systems, Lagrangian Mechanics, Hamilton's principle. Variational methods, nonconservative and nonholonomic systems; matrix-tensor specifications of rigid body motions, normal coordinates. Hamilton's equation of motion, canonical transformation, Hamilton-Jacobi theory. (Lec. 3) Pre: 366 and 372 or equivalent.

**564 Advanced Vibrations (3)**

Theory of vibration of lumped-parameter multi-degree-of-freedom systems; distributed-parameter systems; exact and approximate solutions; nonlinear and random vibrations. Experimental methods and design procedures. (Lec. 3) Pre: 366 or 464 or equivalent.

**565 Wave Motion and Vibration of Continuous Media (3)**

Wave motion and vibrations of strings, rods, beams, plates, and membranes; dynamic elasticity theory; Rayleigh surface waves; solutions using separation of variables and integral transforms. (Lec. 3) Pre: CVE 220, MCE 372, 464, or equivalent.

**566 The Mechanics of Robot Manipulators (3)**

Detailed analysis of the kinematics, dynamics, and control of industrial-type robot manipulator systems. (Lec. 3) Pre: 302, 366, or permission of instructor.

**567 Experimental Nonlinear Dynamics (3)**

Fundamentals of the experimental analysis of nonlinear dynamical systems; mathematical concepts and algorithmic tools to characterize, analyze, model and predict dynamics of nonlinear systems. (Lec. 3) Pre: 366 or 464 or equivalent.

**568 Theory of Plates**

See Civil Engineering 568.

**571 Theory of Elasticity I (3)**

Development of the basic field equations; general concepts of stress and strain; generalized Hooke's law; plane problems; stress functions; Saint Venant torsion and flexure; introduction to three-dimensional problems. (Lec. 3) Pre: CVE 220, MCE 372 or equivalent.

**576 Fracture Mechanics (3)**

Fundamentals of linear and nonlinear materials behavior, linear elastic fracture mechanics, stress analysis and energy viewpoints, two- and three-dimensional problems, elastic-plastic considerations, dynamic and time-dependent fracture, fatigue crack growth, micro-mechanics of fracture processes,

experimental techniques, application to design. (Lec. 3) Pre: 426 or 571 or permission of instructor.

**577, 578 Seminar in Sensors and Surface Technology (1)**

Students, faculty, and invited outside speakers present and discuss selected topics related to research interests of the Sensors and Surface Technology Partnership. (Seminar) Pre: permission of instructor. May be repeated. S/U credit.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**663 Nonlinear Dynamics (3)**

Nonlinear dynamics theory and its applications to mechanical, chemical, electromagnetic or biological oscillators; stability, phase analysis, limit cycles, bifurcations, perturbation methods, chaos, fractals, strange attractors, and other advanced topics. (Lec. 3) Pre: 563 or 546 or permission of instructor.

**653 Fluid Mechanics II (3)**

Continuation of 551, including turbulent modeling, turbulent shear flows and boundary layers, incompressible irrotational flows, and selected topics such as an introduction to non-Newtonian fluid behavior, geophysical flows, or numerical methods. (Lec. 3) Pre: 551.

**671 Theory of Elasticity II (3)**

Continuation of 571; advanced topics selected from complex variable methods; anisotropic solutions; thermoelasticity; displacement potentials and stress functions for three-dimensional problems; micro-mechanics modeling; variational, approximate, and numerical methods. (Lec. 3) Pre: 571 or equivalent.

**678 Micromechanics (3)**

Mechanics of material behavior from the micro structural viewpoint; physical mechanisms of deformation and fracture; continuum mechanics and thermodynamics; rheological classification of solids; thermodynamics and viscoelasticity; plasticity and viscoplasticity; damage mechanisms; applications to metals, ceramics, and composites. (Lec. 3) Pre: 571, CHE 333 or equivalent.

**679 Theory of Plasticity (3)**

Uniaxial behavior of plasticity; perfect plasticity, plastic potential; work-hardening materials, loading surface and loading rules, flow rules; stress-strain relationships; nonlinear kinematic hardening models; foundation of state-variable approaches, viscoplasticity; applications to engineering materials. (Lec. 3) Pre: 571 or permission of instructor.

**680 Advanced Topics in Solid Mechanics (3)**

Advanced studies in the mechanics of solids with specific topics determined by current department interests. Designed for students with at least one year

of previous graduate studies. (Lec. 3) Pre: permission of instructor. May not be repeated.

**691, 692 Special Problems (1-6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 6 credits.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Medical Technology (MTC)**

*Director: Adjunct Professor Paquette*

**102 Introduction to Clinical Laboratory Science (1)**

An introduction to the health care and medical laboratory fields including specialty areas of medical laboratory science, professional organizations, credentialing, and the health care team approach. (Lec. 1)

**195 Biotechnology Manufacturing Methods (4)**

Introduction to biotechnology manufacturing methods including cell culture separation, purification. (Lec. 2, Lab. 4) Pre: enrollment in biotechnology manufacturing option.

**199 Biotechnology Manufacturing Internship (12)**

Professional field experience in biotechnology manufacturing. The experience will be defined by a job description and learning contract arranged by the internship coordinator, student intern, and relevant agency. (Practicum) Pre: enrollment in the biotechnology manufacturing option.

*The clinical courses in medical technology (MTC 405-416) require senior standing and are open only to students who have been accepted into an affiliated hospital school of medical technology.*

**405 Molecular Pathology (2)**

An introduction to pathology. The correlation among pathological processes and clinical symptoms and the course of disease is studied. (Practicum)

**406 Clinical Immunology (2)**

Formation, structure, and action of antigens and antibodies. Methods of immunization. The laboratory emphasizes serological procedures in the diagnosis of disease. (Practicum)

**409 Clinical Microbiology I (4)**

The relationship of bacteria and bacterial diseases of humans, with emphasis on the application of procedures to medical diagnosis. Fungi, viruses, the rickettsias, and human parasites are also studied. (Practicum)

**410 Clinical Microbiology II (4)**

Continuation of 409. (Practicum)

**411 Clinical Chemistry I (4)**

The chemistry of body constituents and their relationship to diagnosis of human disease. Principles and methods of analysis are emphasized. (Practicum)

**412 Clinical Chemistry II (4)**

Continuation of 411. (Practicum)

**413 Immunohematology I (2)**

Instruction in drawing and processing blood and in ascertaining compatibility. Donor-recipient blood and tissue reactions are studied in detail. (Practicum)

**414 Immunohematology II (2)**

Continuation of 413. (Practicum)

**415 Hematology I (3)**

Morphology of the blood and blood-forming organs and the study of abnormalities associated with disease. The dynamics and diagnostic tests of hemostasis are also discussed. (Practicum)

**416 Hematology II (3)**

Continuation of 415. (Practicum)

**451 Professional Topics in Clinical Laboratory****Science (2)**

Professional topics in the medical laboratory sciences, including research methods, education, management, occupational health, public health, regulatory affairs professionalism and ethics. (Practicum)

**483 Introductory Diagnostic Microbiology**

See Microbiology 483.

**501 (or MIC 501) Advanced Clinical Microbiology I (3)**

Current methodology employed in the processing of clinical microbiology specimens, isolation and identification of pathogenic microorganisms, and determination of antimicrobial susceptibility. (Lec. 3) Pre: 409 or MIC 432 or equivalent.

**502 Advanced Clinical Chemistry I (3)**

The pathophysiologic mechanisms as they correlate to clinical chemistry data. Topics include mechanisms of pathology and analytical techniques. (Lec. 3) Pre: 411 or equivalent.

**510 Clinical Laboratory Management (3)**

Supervisory management principles applicable to the clinical laboratory. Includes the processes of supervision, decision making, job performance and evaluation, communications, organizational behavior, and labor relations in the modern laboratory. (Lec. 3) Pre: 400-level medical technology internship or equivalent.

**512 Special Problems in Clinical Laboratory Science (3)**

Assigned research on an advanced level. Students required to outline problem, conduct the necessary research or experimental work, and present observa-

tions and conclusions in a written and oral report. (Independent Study) Pre: 400-level medical technology internship or equivalent.

**513 (or MIC 513) Advanced Clinical Immunology (3)**

Theory, application, and techniques used in clinical immunology: immunochemistry, serology, immunohematology, immunopathology. (Lec. 3) Pre: 406 or MIC 533 or equivalent.

**520 Advanced Hematology (3)**

Special problems, advanced techniques, and methodology in hematology; laboratory approach emphasized. (Lec. 3) Pre: 415 or equivalent.

**530 Recent Advances in Blood Banking and Transfusion Medicine (3)**

Immunohematology, blood banking, and transfusion medicine with emphasis on recent advances. Techniques used for tissue typing and organ transplantation. (Lec. 3) Pre: 413 or equivalent.

**541 Advanced Clinical Microbiology II (3)**

Current research and clinical methodology in clinical mycology, parasitology, mycobacteriology, epidemiology, and infectious disease serology. (Lec. 3) Pre: 409 or MIC 432 or equivalent.

**543 Advanced Clinical Chemistry II (3)**

A comprehensive study of pathophysiologic mechanisms as they relate to clinical chemistry. Topics include immunochemistry, automation, enzymology, pharmacology, and endocrinology. (Lec. 3) Pre: 411 or equivalent.

**551 Topics in Biochemistry for the Clinical Scientist**

See Biochemistry 551.

*The clinical courses in cytopathology (MTC 561–566) require graduate standing and are open only to students who have been accepted into the Rhode Island School of Cytotechnology.*

**561 Introduction to Cytotechnology (3)**

A review of cell and tissue structure, principles of microscopy, and cytological staining methods; overview of organization and management of cytology labs. (Practicum)

**562 Special Topics in Cytotechnology (3)**

Special projects in cytology, cytopathology, or cytotechnology. Students will investigate or review a topic and present a written and oral report. (Practicum)

**563 Cytopathology (3)**

Cytopathology and clinical aspects of cervical dysplasia, carcinoma in situ, and invasive squamous cell carcinoma. Endometrial and endocervical carcinoma and other genital tract cancers will be considered. (Practicum)

**564 Medical Cytology (3)**

Benign and malignant cytology of the gastrointestinal, respiratory, and urinary tracts; study of exfoliative cells in urine, serious effusions, cerebrospinal fluid, and breast secretions. (Practicum)

**565 Cytology Practicum I (6)**

Microscopic evaluation and screening of benign cytological smears from cervical dysplasia, carcinoma in situ, and invasive malignant tumors of the female genital tract. (Practicum)

**566 Cytology Practicum II (6)**

Microscopic evaluation and screening of cytological smears from the gastrointestinal, urinary, respiratory, and central nervous systems and from other body fluids. (Practicum)

**571 (or BPS 536) Biotechnology Product Evaluation and Development (3)**

The process through which candidate products produced using recombinant DNA technology are evaluated for safety and efficacy, including conductance of clinical trials, economic issues, and regulatory affairs. (Lec. 3) Pre: graduate standing and permission of chairperson.

**590 Special Problems in Clinical Chemistry (1–6)**

Intensive tutorial work, research, and readings in clinical chemistry. (Independent Study) Pre: graduate standing and permission of chairperson.

**591 (or MIC 591) Special Problems in Clinical Microbiology (1–6)**

Intensive tutorial work, research, and readings in clinical microbiology. (Independent Study) Pre: graduate standing and permission of chairperson.

**592 Special Problems in Hematology (1–6)**

Intensive tutorial work, research, and readings in hematology. (Independent Study) Pre: graduate standing or permission of chairperson.

**593 Special Problems in Immunohematology (1–6)**

Intensive tutorial work, research, and readings in immunohematology. (Independent Study) Pre: graduate standing and permission of chairperson.

**594 Special Problems in Biotechnology (3)**

Intensive tutorial work, research, and readings in biotechnology. (Independent Study) Pre: graduate standing and permission of chairperson.

**Microbiology (MIC)**

*Chairperson: Professor Sperry*

**102 Exploring the Microbial World (3)**

A guided tour of aquatic and disease-causing microorganisms, emphasizing their impact on humans. The role of microorganisms in evolution, environmental and human health, biotechnology, and natural product prospecting. (Lec. 3)

**190 Issues in Biotechnology (3)**

See Aquaculture and Fisheries Science 190. (N)

**201 Introductory Medical Microbiology (4)**

Required of all students in nursing, dental hygiene, and pharmacy. Lecture and laboratory designed to illustrate microbiological principles and techniques. For students in allied health professions. (Lec. 3, Lab. 3) Pre: one semester of biology and one year of chemistry. Not open to students with credit in 211.

**211 Introductory Microbiology (4)**

Introduction to microorganisms. Morphology, structure, metabolism, genetics, growth, populations in natural habitats, and their effects on the environment. For biological sciences majors. (Lec. 3, Lab. 3) Pre: two semesters of biology, one semester of organic chemistry, which can be taken concurrently. Not open to students with credit in 201.

**306 Eukaryotic Microbiology/Protistology (3)**

Free-living and disease-causing eukaryotic microorganisms are examined in depth, with a focus on those causing human and animal diseases, inhabiting coastal/marine habitats, or used in research. (Lec. 3) Pre: two semesters of biology.

**333 Immunology and Serology (3)**

Introduction to the immune response; host resistance to infection; immunopathology; antibodies, antigens, and use of serological techniques. (Lec. 3) Pre: 201 or 211.

**334 Virology (3)**

An introduction to the basic aspects of virus structure, classification, and replication as these relate to viruses as agents of infectious disease. (Lec. 3) Pre: 201 or 211.

**409 Marine Micrograzers (2)**

Practical experience with collection, cultivation, and identification of diverse marine and coastal heterotrophic protists of the phylum Ciliophora, using phase, fluorescence, and electron microscopy, digital still micrography, videomicroscopy, genetic fingerprinting. (Lab. 4) Pre: two semesters of biology laboratory courses.

**412 Food Microbiology (3)**

Analysis of water and milk; examination of dairy and other food products. (Lec. 2, Lab. 4) Pre: 201 or 211 and one semester of biochemistry, which may be taken concurrently.

**413 Advanced Microbiology Lecture I (3)**

The physiology, genetics, developmental and molecular biology of microorganisms. (Lec. 3) Pre: 211, credit or concurrent enrollment in BCH 311 and BIO 352, or permission of instructor.

**414 Advanced Microbiology Lecture II (3)**

The structural, developmental, and physiological diversity of microorganisms; symbiotic relationships, molecular basis of ecology, and the role of microor-

ganisms in the soil and water environment. (Lec. 3) Pre: 211, credit or concurrent enrollment in BCH 311, or permission of instructor.

**415 Advanced Microbiology Laboratory I (2)**

Introduction to techniques and methods for advanced study of microbial genetics, physiology, molecular and developmental biology of microorganisms. (Lab. 6) Pre: concurrent enrollment in 413 or permission of instructor.

**416 Advanced Microbiology Laboratory II (2)**

Techniques and methods for the advanced study of microorganisms with emphasis on the study of representative groups of microorganisms and the application of these techniques to soil and aquatic environments. (Lab. 6) Pre: concurrent enrollment in 414 or permission of instructor.

**422 Biotechnology of Industrial Microorganisms (3)**

Application of microorganisms to industrial processes. Culture handling and strain development. Regulation and control of fermentation products. (Lec. 3) Pre: BCH 311 and an advanced course in microbiology, or permission of instructor.

**432 Pathogenic Bacteriology (3)**

The more important microbial diseases, their etiology, transmission, diagnosis, and control. Laboratory, emphasis on methods of diagnosis. (Lec. 2, Lab. 3) Pre: 201 or 211 or one semester of organic chemistry.

**440 (or APS 440 or NUR 440) Public Health Practicum in Infectious Disease Control (3)**

Principles of and practical experience in prevention and control of emerging infectious diseases. (Practicum) Pre: BIO 101 or equivalent or permission of instructor.

**447 Experimental Cell Biology (2)**

Use of eukaryotic microorganisms as humane experimental models to analyze cell physiological processes such as endocytosis, motility, and secretion, using immunocytochemistry, biological assays, fluorescent probes, digital still, and video imaging. (Lab. 4) Pre: two semesters of biology laboratory courses.

**451 Laboratory in Cell Biology**

See Biological Sciences 451.

**453 Cell Biology**

See Biological Sciences 453.

**483 (or MTC 483) Introductory Diagnostic Microbiology (3)**

Diagnosis of infectious diseases by use of microbiology, immunology, and hematologic and clinical chemical methods; organisms covered include viruses, bacteria, fungi, and parasites. (Lec. 2, Lab. 2) Pre: 201 or 211. Open only to clinical laboratory science or microbiology majors or permission of instructor.

**491, 492 Research in Microbiology (1-6 each)**

Special problems in microbiology. Student required to outline a problem, carry on experimental work, and present conclusions in a report. (Independent Study) Open only to seniors in microbiology. A maximum of 6 credits can be taken for major credit.

**495 Seminar in Microbiology (1)**

Preparation and presentation of papers on selected subject in microbiology. (Seminar) S/U credit.

**499 Biotechnology Internship (3-12)**

Professional field experience in biotechnology. The experience will be defined by a job description and learning contract arranged by the MIC internship coordinator, student intern, and relevant agency. (Practicum) Pre: junior or senior standing and approval by the MIC internship coordinator and department chairperson. A maximum of 12 credits can be taken as major credit. Not for graduate credit.

**501 Advanced Clinical Microbiology I**

See Medical Technology 501.

**502 (or BCH 502) Techniques of Molecular Biology (2)**

Basic techniques of molecular biology used in the study of gene structure and function including DNA/RNA and plasmid isolation, northern and southern blotting, PCR and gene cloning, among others. (Lab. 6) Pre: BIO 437 or permission of instructor.

**506 Biology of Eukaryotic Microorganisms/Protists (3)**

The biology of free-living and parasitic eukaryotic microorganisms is explored, with an emphasis on systematics, evolution, cell physiology, development, reproduction, and molecular biology of those species most commonly used in research at the present time. (Lec. 3) Pre: two semesters of biology.

**508 Seminar in Biological Literature**

See Biological Sciences 508.

**513 Advanced Clinical Immunology**

See Medical Technology 513.

**521 (or BIO 521) Recent Advances in Cell and Molecular Biology (2)**

Reading and discussion of current literature (original research papers and review articles) in the area of molecular cell biology, and presentation of oral reports. Final written report or exam. Emphasis on eukaryotic cells. (Lec. 2) Pre: at least one of the following courses or an equivalent course emphasizing cell structure and function – MIC 453; BCH 437, 453, 481; BIO 437, 453 or permission of instructor. May be repeated for a maximum of 4 credits.

**522 Bioinformatics I**

See Computer Science 522.

**523 (or NRS 523) Water Pollution Microbiology (3)**

The microbiological aspects of water pollution, including the potential for infectious diseases, pollution effects on microbial ecosystems, and the microbial degradation of pollutants. (Lec. 3) Pre: 201 or 211, BCH 311, or permission of instructor. Credit or concurrent enrollment in 525.

**525 Water Pollution Microbiology Laboratory (1)**

Experimental method for pollution analysis, microbial indicator assay methods, microbial assays, sample collection, and statistical treatment of data. (Lab. 3) Pre: concurrent enrollment in 523 or permission of instructor.

**533 Immunology (3)**

Introduction to the cellular, molecular, and genetic basis of the immune system, and the role of the immune system in immunity to infection, tumor and transplantation immunobiology, and immunopathology. (Lec. 3) Pre: 201 or 211.

**534 Animal Virology**

See Aquaculture and Fisheries Science 534.

**536 Virology Laboratory**

See Aquaculture and Fisheries Science 536.

**538 (or AFS 538 or AVS 538) Epidemiology of Infectious Diseases (3)**

Principles of epidemiology, interrelationships of host, environment, and agent in infectious diseases. (Lec. 3)

**552 (or BCH 552) Microbial Genetics (3)**

Recent research on the mechanism of mutation, genetic recombination, the genetic code, transposons, regulations, genetic engineering, and regulation of DNA, RNA, and protein synthesis in microbial systems. (Lec. 3) Pre: 201, BIO 352, and BCH 311.

**561 Recent Advances in Molecular Cloning (1)**

Reports of readings concerning the latest developments in techniques of molecular cloning and their applications in the study of various biological systems. (Lec. 1) Pre: 552 or permission of instructor. May be repeated.

**571 Insect Microbiology**

See Entomology 571.

**576 Marine Microbiology**

See Oceanography 576.

**591 Special Problems in Clinical Microbiology**

See Medical Technology 591.

**593, 594 The Literature of Bacteriology (1 each)**

Thorough study of original literature of some phase of bacteriology. Written abstracts or papers on assigned topics are discussed in weekly conferences with instructor. (Independent Study)

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**654 Advances in Immunology (2)**

Reports on assigned readings concerning latest developments in the field of cellular and humoral immunity presented and discussed by students. Research paper and critical review of a scientific paper required. (Lec. 2) Pre: 533, BCH 311, or permission of instructor. May be repeated for a maximum of 4 credits. In alternate years. Next offered 2008.

**656 Mechanisms of Bacterial Pathogenesis (3)**

Study of recent research on the molecular mechanisms of pathogenesis. Students expected to participate in roundtable discussions of recent pertinent literature. (Lec. 3) Pre: 432, 552, and BCH 311. In alternate years. Next offered spring 2008.

**691, 692 Special Problems in Microbiology (3 each)**

Assigned research on an advanced level. Student required to outline problem, conduct the necessary literature and experimental work, and present observations and conclusions in a report. (Independent Study) Pre: graduate standing.

**695, 696 (or BCH 695, 696) Graduate Research Seminar (1 each)**

Reports of research in progress or completed. (Seminar) Required of all graduate students in microbiology. S/U credit.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**930 Workshop in Microbiology Topics for Teachers (0-3 each)**

Especially designed for teachers of biology. Basic topics of microbiology from an advanced or pedagogical perspective. (Workshop)

*Note: For virology, see aquaculture and fisheries science (AFS) and also plant sciences (PLS). For mycology, see biological sciences (BIO).*

**Military Science and Leadership (MSL)**

*Chairperson: Professor Yager*

**101 (MSC) Introduction to Leadership I (1)**

Introduction to leadership dimensions while presenting a big picture understanding of a leadership development program. Students may participate in events including rappelling and land navigation. No military obligation is associated with this course. Open to all levels. (Lec. 1)

**102 (MSC) Introduction to Leadership II (1)**

Overview of leadership fundamentals such as problem solving, public speaking, providing feedback, and using effective writing skills. Topics include skills such as first aid, marksmanship, survival, and orienteering. No military obligation is associated with this course. Open to all levels. (Lec. 1)

**201 (MSC) Leadership and Military History (3)**

Study of innovative leadership styles and Army tactics by examining key battles throughout history. Case studies provide context for learning ethical decision making and Warrior Ethos as they apply in the contemporary operating environment. Open to all levels. (Lec. 3)

**202 (MSC) Leadership and Team Building (3)**

Examines the challenges of leading teams in the complex contemporary operating environment (COE). Highlights dimensions of terrain analysis, patrolling, and operation orders in the context of military operations. Open to all levels. (Lec. 3)

**300 (MSC) Leadership Training Internship (6)**

Four-week paid summer internship held at Fort Knox, KY. Upon completion, the student will receive 6 credits and meet the requirements of the 100- and 200-level studies and qualify for continued studies in leadership development. (Practicum) Pre: permission of department.

**301 (MSC) Advanced Leadership Management (3)**

Integrates the principles and practices of leadership and personal development to prepare students for the U.S. Army's Leadership Development and Assessment program. (Lec. 3) Pre: permission of department.

**302 (MSC) Advanced Leadership Management II (3)**

Builds on the foundation of 301. Focuses on developing students' situational leadership abilities to enable them to succeed in demanding, realistic, and stressful practical exercises requiring mental and physical agility. (Lec. 3) Pre: permission of department.

**401 (MSC) Adaptive Leadership (3)**

Students experience opportunities in planning and leading student operations to develop as adaptive leaders. Classroom and situational leadership experiences designed to prepare for first workplace experience. Pre: 301 and 302 or permission of department. Not for graduate credit.

**402 (MSC) Adaptive Leadership in a Complex World (3)**

Explores the dynamics of leading in complex situations. Study differences in cultural customs and courtesies, law of land warfare, and rules of engagement in the face of international terrorism. (Lec. 3) Pre: 301 and 302 and 401 or permission of department. Not for graduate credit.

**403 (MSC) Army Topics – Military History (3)**  
Development of an approved project under faculty supervision. (Independent Study/Online) Pre: permission of chairperson. Not for graduate credit.

## Music (MUS)

*Chairperson: Professor R. Lee*

*Note: Applied music courses with an asterisk—MUS 110, 210, 310, 410, and 510 (except Composition) require a supplementary fee: \$105 for 1 credit; \$200 for 2, 3, 4, or 6 credits.*

### 101 Introduction to Music (3)

Fosters a better understanding and appreciation of the world's great music. Consideration of musical styles, techniques, and forms from the listener's standpoint. (Lec. 3/Online) (A) [D]

### 106 History of Jazz (3)

The nature and origin of jazz and its development as an American folk idiom: European and African heritages, blues, ragtime, Dixieland, boogie-woogie, swing, bop, cool, funky, gospel, jazz-rock, free-form, and progressive. (Lec. 3) (A) [D]

### 109 Basics of Singing (1)

Basic singing technique, tone production, interpretation, and introduction to song literature for those not enrolled in 110–510 Applied Music. (Lab. 2) Pre: must not be registered for 110, 210, 310, 410, or 510.

### \*110 Applied Music (1–3)

Private instruction in performance at the freshman level. One credit equals a half-hour lesson per week. Two or three credits equal an hour lesson per week and require additional preparation time, higher levels of performance, and recital performances. Music convocation performance is encouraged but not required. (Studio) Pre: audition and permission of chairperson. May be repeated for credit.

A Voice	I Flute	Q Euphonium/
B Piano	J Oboe	Baritone
C Organ	K Clarinet	R Tuba
D Harpsichord	L Bassoon	S Percussion
E Violin	M Saxophone	T Guitar
F Viola	N Trumpet	U Harp
G Violoncello	O French Horn	V Composition
H Contra Bass	P Trombone	W Jazz

### 111 Basic Musicianship (3)

Use of folk, classical, and popular music to learn essentials of music reading and music theory. (Lec. 3/Online) (A)

### 119 Introduction to the Music Profession (1)

Overview of the music profession. Development of an individualized plan for music study including articulation of learning and career goals. Introduction to skill areas including research and writing about music, basic musicianship, and appreciation of music

literature. (Lec. 1) For music majors and minors. May be substituted for URI 101. Service learning.

### 120 Basic Music Theory (2)

Development of basic music theory concepts as well as basic sight-singing, rhythmic, and ear training skills. (Lec. 2) Pre: taken concurrently with 119. Permission of instructor or chairperson required if not taken concurrently with 119. For music majors and minors.

### 121 Music Theory I (2)

Rhythmic, melodic, and harmonic elements of music. Scales, modes, intervals, rhythmic notation, and triads. Part writing, analysis, and keyboard work involving primary triads. (Lec. 1.5, Lab. 1) Pre: 119 and 120 or permission of instructor. Concurrent or previous keyboard experience.

### 122 Ear Training and Sight-singing I (2)

Sight-singing in major and minor keys, including outlines of tonic and dominant harmonies. Rhythmic reading, aural recognition, with notation of material of 121. (Lec. 1.5, Lab. 1) Pre: 121. May be taken concurrently.

### 169 Percussion Class (1–2)

Basic principles in performance and pedagogy of percussion instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered spring 2008.

### 170 Guitar Class (1–2)

Basic principles in performance and pedagogy of the guitar. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered spring 2008.

### 171 Piano Class I (1)

Development of basic techniques and musicianship for effective use of the piano. This course will emphasize proficiency I. (Lab. 2) Pre: credit or concurrent enrollment in 121 and 122.

### 172 Piano Class II (1)

Further development of basic techniques and musicianship for effective use of the piano. Basic keyboard skills in transposition, sight-reading accompaniments, and melody harmonization with improvised accompaniment. This course will emphasize proficiencies 2 and 3. (Lab. 2) Pre: 171 or equivalent.

### 173 Voice Class (1–2)

Basic principles and pedagogy of singing, physiology, breathing, tone production, diction. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered fall 2007.

### 175 String Class (1–2)

Basic principles in performance and pedagogy of string instruments. (Lab. 2) Open to music majors

and other students who demonstrate ability to read music. Offered every third semester. Next offered spring 2008.

### 177 Woodwind Class (1–2)

Basic principles in performance and pedagogy of woodwind instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Next offered fall 2007.

### 179 Brass Class (1–2)

Basic principles in performance and pedagogy of brass instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Fall 2007.

### \*210 Applied Music (1–3)

Private instruction in performance at the sophomore level. One credit equals a half-hour lesson per week. Two or three credits equal an hour lesson per week and require additional preparation time, higher levels of performance, and music convocation performance. (Studio) Pre: 110 or equivalent. See 110 for areas of study (A-W). May be repeated for credit.

### 221 History of Music I (1–3)

Historical development of classical and popular music in European and non-European cultures: world music, Medieval, and Renaissance eras. (Lec. 1–3) Pre: 121 or equivalent competency. May be taken for 1 or 2 credits only with permission of instructor prior to registration.

### 222 History of Music II (1–3)

Continuation of 221: Baroque, Classical, and Romantic eras. (Lec. 1–3) Pre: 225 or equivalent competency and 221 or consent of instructor. May be taken for 1 or 2 credits only with permission of instructor prior to registration.

### 225 Music Theory II (2)

Continuation of 121, covering all diatonic triads, dominant and supertonic seventh chords, and modulation to closely related keys. (Lec. 1.5, Lab. 1) Pre: 121 and 122.

### 226 Ear Training and Sight-singing II (2)

Continuation of 122. Covering all diatonic triads, dominant and supertonic seventh chords, and modulation to closely related keys. (Lec. 1.5, Lab. 1) Pre: 122 and 225; 225 may be taken concurrently.

### 227 Music Theory III (2)

Advanced rhythmic, melodic, and harmonic practice approached through analysis, keyboard, and part writing, including original work. Covers seventh, ninth, eleventh, and thirteenth chords, chromatic alteration, chromatic progression, and foreign modulation. (Lec. 1.5, Lab. 1) Pre: 225 or equivalent.

### 228 Ear Training and Sight-singing III (2)

Advanced rhythmic, melodic, and harmonic practice approached through sight-singing and dictation

including computer-aided instruction. (Lec. 1.5, Lab. 1) Pre: 226 or equivalent.

**235 Introduction to Music Teaching (3)**

Overview of music teaching in schools and studios. History, philosophy, curriculum, learning theory, and current topics in music teaching as they relate to the broader field of education. (Lec. 3) Pre: 110 or 119 or permission of instructor.

**238 General Music Methods and Materials (3)**

Teaching methods, instructional materials, and evaluation procedures for general music, grades K-12. Learner characteristics and development of children and adolescents. (Lec. 3) Pre: sophomore standing in music.

**271 Piano Class III (1)**

Further development of basic keyboard performance skills in sight-reading and harmonization. This course will emphasize proficiencies 4 and 5. (Lab. 2) Pre: 172 or equivalent. Open only to music majors.

**272 Piano Class IV (1)**

Continuation of 271. Further development of keyboard performance skills in sight-reading and harmonization. This course will emphasize proficiencies 6 and 7. (Lab. 2) Pre: 271 or equivalent. Open to music majors only.

**280 Mid-Program Portfolio in Music (0)**

Individual accomplishment of activities and experiences, demonstrating interest and competency in music at the midpoint in the student's program of studies as a music major. (Portfolio) Pre: sophomore standing in music.

**283 Vocal Diction (3)**

Basic phonetics (International Phonetic Alphabet). Enunciation in the foreign languages most frequently encountered in vocal and choral literature (Italian, French, German, and Latin). English diction in singing. (Lec. 3) In alternate years. Next offered spring 2009.

**290 University Pep Band (0-1)**

Rehearsal and performance of a wide variety of rock, jazz, rhythm and blues, marches, popular and other contemporary music for home and away URI basketball games. (Rehearsal 2) May be repeated for credit. Pre: audition and permission of instructor.

**291 University Marching Band (0-2)**

Rehearsal and performance of music, drill, and shows for URI football games. (Rehearsal 8) May be repeated for credit.

**292 Concert Band (0-1)**

Study and performance of concert band music. Open to all students. (Rehearsal 3) May be repeated for a total of 3 credits for general education (A) [D]. S/U only for 0 credit.

**293 University Chorus (0-1)**

(Rehearsal 3) May be repeated for a total of 3 credits for general education (A) [D]. S/U only for 0 credit.

**300 Music Convocation (0-1)**

Study of repertoire and techniques of concert presentation through attendance of student recitals and presentations by faculty and visiting artists. (Lab.) Attendance at 75 percent of events required. May be repeated.

**\*310 Applied Music (2-4)**

Private instruction in performance at junior level. Two, three, or four credits equal an hour lesson per week. More credit requires additional preparation time, higher levels of performance, and junior recital or music convocation performance. (Studio) Pre: 210 or equivalent. See 110 for areas of study (A-W). May be repeated for credit.

**311 Basic Conducting (2)**

A course in elementary conducting techniques including baton techniques and score study as well as the organization of instrumental and choral rehearsals. Pre: credit or concurrent enrollment in 225 and 226.

**312 Advanced Conducting (3)**

A study of problems and approaches to instrumental and choral conducting based on advanced baton techniques. Principles of interpretation and the art of communication through practical experience with departmental organizations. Pre: 311.

**322 History of Music III (1-3)**

Continuation of 221 and 222: European, African-American, Hispanic, and other contributions to the classical and popular music of the 20th century. (Lec. 1-3) Pre: 121 or equivalent competency and 221 or consent of instructor. May be taken for 1 or 2 credits only with permission of instructor prior to registration.

**329 (or EDC 329) Music for the Elementary School Teacher (3)**

Fundamentals of music and methods employed in teaching music and making it a more meaningful and integral part of the curriculum in the elementary school. (Lec. 3) Open only to elementary and early childhood education majors.

**339 Choral Methods and Materials (3)**

Organization and administration of choral music programs in elementary and secondary schools, focusing on materials, procedures, policies, and teaching methods. (Lec. 3) Pre: EDC 250 or the equivalent.

**340 Instrumental Methods and Materials (3)**

Organization and administration of the instrumental music program in elementary and secondary schools, focusing on materials, procedures, policies, and teaching methods. (Lec. 3) Pre: EDC 250.

**350 Junior Recital (0-1)**

Performance of a public program at least 20 minutes in duration after faculty examination. (Studio) Pre: concurrent enrollment in 310.

**371 Piano Accompanying (1)**

Development of sight-reading skills. Preparation and performance of accompaniments. (Lec. 1) Pre: permission of piano faculty. May be repeated.

**391 Jazz Studio Laboratory (1)**

Studies in jazz performance practices, pedagogy, and literature. Historical perspectives, stylistic concepts, and repertoire from 1917 to the present developed in the ensemble setting. (Lab. 3) Pre: 121, 122, 171.

**394 Symphonic Wind Ensemble (0-1)**

(Rehearsal 3) Pre: audition and permission of instructor. May be repeated for credit. S/U only for 0 credit.

**395 Concert Chorus (0-1)**

(Rehearsal 3) Pre: audition and permission of instructor. May be repeated for credit. S/U only for 0 credit.

**396 Jazz Studio Ensemble (0-1)**

Performance and study of jazz and studio music as related to professional experience. (Rehearsal 3) Pre: audition and permission of instructor. S/U only for 0 credit.

**397 University Symphony Orchestra (0-1)**

Study and performance of standard and modern repertoire for the orchestra. (Rehearsal 3) Pre: audition and permission of instructor. May be repeated for credit. S/U only for 0 credit.

**398 Chamber Music Ensembles (0-1)**

Chamber music ensembles are small performance ensembles normally restricted to one performer per part. Study and perform repertoire in the following areas, or combinations of these areas: keyboard, string, woodwind, brass, percussion, vocal, guitar, jazz, etc. (Rehearsal 2) Pre: audition and/or permission of chamber music coach.

**407 The Symphony (3)**

Study of the development of orchestration and of formal procedures such as the sonata, rondo, and variations. Includes works by composers such as Haydn, Beethoven, Brahms, and Tchaikovsky. (Lec. 3) Pre: 222. Offered every seventh semester. Next offered fall 2010.

**408 The Opera (3)**

History of opera from its beginnings in Italy in the 17th century to the present, including works by composers such as Monteverdi, Purcell, Mozart, Wagner, Verdi, and Puccini. Pre: credit or concurrent enrollment in 222 or the ability to read music. Offered every seventh semester. Next offered fall 2008.

**\*410 Applied Music (2-4)**

Private instruction in performance at the senior level. Two, three, or four credits equal an hour lesson per

week. More credit requires additional preparation time, higher levels of performance, and senior recital or music convocation performance. (Studio) Pre: 310 or equivalent. See 110 for areas of study (A-W). May be repeated for credit. Not for graduate credit, except 410V (Composition).

#### 416 Form and Analysis (3)

Critical study of the structure of tonal music. Works of various composers are analyzed with reference to motive and phrase as generative elements in design. (Lec. 3) Pre: 227 or equivalent. In alternate years. Next offered fall 2008.

#### 417 Instrumentation and Choral Arranging (3)

Range, timbre, transpositions, and other characteristics of instruments, singly and in combination. Elements of choral arranging. Exercises with attention to part writing, harmony, and form. Setting of a small piece of music for orchestra, band, or chorus required. Pre: credit or concurrent enrollment in 227 or equivalent. In alternate years. Next offered fall 2007.

#### 420 Eighteenth-Century Counterpoint (3)

Tonal polyphony in the style of J.S. Bach. Includes creative exercises in writing counterpoint in Baroque style and the study of representative compositions such as the inventions and fugues of Bach. (Lec. 3) Pre: 227 and 228. In alternate years. Next offered spring 2008.

#### 421 Electronic and Computer Music Research (3)

Study and application of technology for music research in music education, theory/composition, music history, and performance, culminating in a major project in the student's area of specialization. (Lec. 2, Lab. 2) Pre: 235 or equivalent. In alternate years. Next offered spring 2009.

#### 424 Jazz Theory and Improvisation (3)

An intensive study and practice of the formal elements of jazz improvisation. (Lec. 1, Lab. 4) Pre: 225, 226 and acceptance into 210. In alternate years. Next offered spring 2008.

#### 430 The Renaissance Era (3)

Music at European courts and cathedrals (1400–1600), including vocal masses, motets, madrigals, and chansons, and instrumental canzonas, ricercars, toccatas, and variations of Dufay, Josquin, Palestrina, Gabrieli, et al. (Lec. 3) Pre: 221 or the ability to read music. Offered every seventh semester. Next offered spring 2010.

#### 431 The Baroque Era (3)

Music of 1600–1750, from the rise in Italy of opera, oratorio, idiomatic instrumental music, the sonata, and the concerto, through the works of German masters Bach and Handel. (Lec. 3) Pre: 222 or the ability to read music. Offered every seventh semester. Next offered fall 2007.

#### 432 The Classic Era (3)

Music of 1750–1825, beginning with the founders of the Classical style, including D. Scarlatti, Gluck, and the sons of Bach, and culminating in the works of Haydn, Mozart, and Beethoven. (Lec. 3) Pre: 222. Offered every seventh semester. Next offered spring 2008.

#### 433 The Romantic Era (3)

Music of 1825–1900, with emphasis on topics central to the era, including program music, nationalism, piano virtuosity, opera, lieder, the cyclic symphony, and turn-of-the-century Viennese post-Romanticism. (Lec. 3) Pre: 222 or the ability to read music. Offered every seventh semester. Next offered spring 2009.

#### 434 The Modern Era (3)

Music of the modern era, with emphasis on changing aesthetics as revealed through the analysis of selected compositions. (Lec. 3) Pre: 227 or the ability to read music. Offered every seventh semester. Next offered fall 2009.

#### 442 Directed Study in Applied Music Pedagogy (2)

Research in materials and approaches for studio teaching. Pre: 4 credits in 210. In alternate years. Next offered fall 2008.

#### 450 Senior Recital (0–1)

Performance of a public program at least 20 minutes in duration after faculty examination. Pre: concurrent enrollment in 410. Not for graduate credit.

#### 470 Special Topics in Music (1–3)

Exploration of advanced topics not covered by the standard curriculum but of interest to faculty and students in a particular semester. Topics in performance, music history, music theory or composition, music education. May be repeated for credit with a different topic.

#### 480 Graduation Portfolio (0–2)

Seminar covering topics and the development of a graduation portfolio appropriate to the student's degree program. The portfolio shows accomplishments from throughout the degree program and achievement of competencies indicating potential success as a graduate. (Portfolio) Pre: 280 or permission of chairperson and senior standing in music. For music education majors, concurrent enrollment in EDC 484 required. To be taken during the last semester of coursework in the major. May be repeated. Not for graduate credit.

#### 485 Opera Workshop (0–1)

Coordination of music and drama. Singing, performing, and acting techniques on stage. Possible experience in conducting, coaching, directing, and stage management. Development of professional standards and attitudes. Preparation and presentation of

scenes from various operas. Primarily for students in voice. (Rehearsal 2) Pre: audition and/or permission of instructor. May be repeated for credit.

#### 490 Independent Study (1–3)

Preparation of a project under the guidance of a member of the appropriate faculty. (Independent Study) Pre: acceptance by faculty member who will be the project advisor and approval of chairperson. May be repeated for credit.

#### \*510 Applied Music (2, 3, 4, or 6)

Private instruction. One 60-minute lesson each week. Levels, master classes, and recital performance as prescribed in the applied music syllabi. (Studio 60 minutes) Pre: audition demonstrating proficiency appropriate to the selected M.M. degree. See 110 for areas of study (A-W).

Y Choral Conducting

Z Instrumental Conducting

There is no fee for choral or instrumental conducting. May be repeated.

#### 540 Foundations of Music Education (3)

Examination of the broad influences upon music education. Historical, philosophical, sociological, psychological, and curricular foundations. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered fall 2007.

#### 545 Musical Learning, Evaluation, and Assessment (3)

A study of cognitive, psychomotor, and affective learning in music. The ways in which musical learning may be evaluated and assessed. The needs of special populations will be included. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered spring 2008.

#### 548 Research in Music (3)

Study of research techniques as applied to the art of music. Major project procedures and data collection and examination in the following research categories: historical, philosophical, and empirical. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered fall 2008.

#### 550 Graduate Performance Recital (0–1)

Performance of advanced repertoire of various styles in a public program at least 55 minutes in duration for the M.M. in performance and 45 minutes in duration for the M.M. in music education after faculty acceptance. (Studio) Pre: concurrent enrollment in 510 and 6 or more credits in 510 for the M.M. in performance or 4 or more credits in 510 for the M.M. in music education.

#### 552 Graduate Composition Recital (0–1)

A juried recital of at least 40 minutes of original compositions prepared by the composer. (Studio) Pre: concurrent enrollment in 510V and 3 or more credits in 510V.

**567 Seminar in Performance and Pedagogy (2)**  
Study of performance literature, practice, and pedagogy. Research projects and supervised teaching experience appropriate to the major performance area. (Lec. 2) Pre: concurrent enrollment in 550. In alternate years. Next offered fall 2008.

**570 Graduate Project (3)**  
Independent study resulting in a major essay, composition, or orchestration. (Independent Study) Pre: 548 and permission of chairperson.

**571 Special Topics in Music (1-3)**  
Exploration of advanced topics not covered by the standard graduate curriculum but of interest to faculty and students in a particular semester. Possible topics include performance, music history, music theory, composition, and music education. (Lec. 1-3) May be repeated for credit with a different topic.

**579 Experiential Learning in Music (2)**  
Developing competence through an individual and/or collaborative experiential activity involving music research, performance, service, and/or teaching in university and community settings. May include professional music studio or computer lab work. Student will work with his or her major professor or with the director of graduate studies. (Practicum) Pre: graduate standing and previous or concurrent enrollment in 580.

**580 Master of Music Portfolio I (0)**  
Planning individual activities and experiences demonstrating competence in music at the graduate level. Should be taken in the first semester of matriculation. Student will work with his or her major professor or with the director of graduate studies. (3 common Seminars) Pre: graduate standing in music. Not required for students whose bachelor's degree is from URI. S/U only.

**581 Master of Music Portfolio II (1)**  
Individual accomplishment of activities and experiences demonstrating competence at the graduate level of music. Achievement of professional behaviors indicating significant growth in areas of specialization. Oral presentation required. Should be taken in final semester of study. Student will work with his or her major professor or with the director of graduate studies. (3 common Seminars) Pre: graduate standing in music. S/U only.

**583 Vocal Diction (3)**  
Phonetics (International Phonetic Alphabet). Enunciation in the foreign languages most encountered in vocal literature (French, Italian, and German). English diction in singing. (Lec. 3) In alternate years. Next offered spring 2009.

**590 Piano Accompanying (1)**  
Development of sight-reading skills. Preparation and performance of accompaniments of major works. (Studio 1) Pre: permission of piano faculty. May be repeated for a maximum of 3 credits.

**593 University Chorus (0-1)**  
(Rehearsal 3) Pre: audition at graduate level of performance. May be repeated.

**594 Symphonic Wind Ensemble (0-1)**  
(Rehearsal 3) Pre: audition at graduate level of performance.

**595 Concert Choir (0-1)**  
(Rehearsal 3) Pre: audition at graduate level of performance.

**596 Jazz and Studio Ensemble (0-1)**  
Study and performance of jazz and studio music, with leadership roles in improvisation and performance. (Rehearsal 3) Pre: audition at graduate level of performance.

**597 University Symphony (0-1)**  
(Rehearsal 3) Pre: audition at graduate level of performance. May be repeated.

**598 Chamber Music Ensembles (0-1)**  
Chamber music ensembles are small performance ensembles normally restricted to one performer per part. Chamber music ensembles study and perform repertoire in the following areas, or combinations of areas: keyboard, string, woodwind, brass, percussion, vocal, guitar, jazz, etc. (Rehearsal 2) Pre: audition and/or permission of chamber music coach.

**599 Master's Thesis Research**  
Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: 548. May be repeated. S/U credit.

## Natural Resources Science (NRS)

*Chairperson:* Professor Paton

**100 Natural Resource Conservation (3)**  
Introduction to humans' use and management of natural resources: land, food, forest, wildlife, water, minerals, and air, with a survey of contemporary resource-use problems in environmental pollution. (Lec. 3)

**101 Freshman Inquiry into Natural Resources Science (1)**  
Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the Department of Natural Resources Science. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

**190 Issues in Biotechnology (3)**  
See Aquaculture and Fisheries Science 190. (N)

**200 Seminar in Natural Resources (1)**  
Review and discussion of research, management, and other topics in natural resources. Speakers expose students to issues that natural resources professionals are concerned with and the work that they do. Pre: 100.

**212 Introduction to Soil Science (3)**  
Physical, biological, and chemical properties of soils and their practical application to environmental science. Introduction to soil genesis, classification, and land-use and conservation issues. (Lec. 3)

**223 Conservation of Populations and Ecosystems (3)**  
Conservation of biological diversity in a world dominated by humans. Conservation biology theory, application; ecosystem conservation; landscape ecology principles. (Lec. 3) Pre: 100, BIO 101 or 102.

**300 Introduction to Global Issues in Sustainable Development**  
See Community Planning 300.

**301 Introduction to Forest Science (3)**  
Development and importance of forestry; forest regions; tree characteristics and identification with emphasis on Northeastern species; forest environment; tree growth and site productivity. (Lec. 2, Lab. 2) Pre: BIO 102.

**302 Fundamentals of Forest Management (3)**  
Wood properties, timber harvesting, measurement and utilization of forest products; establishment, tending, and protection of forest stands; silvicultural systems; forest inventory procedures and management plans. (Lec. 2, Lab. 2) Pre: 301.

**304 Field Ornithology (3)**  
Identification, field study techniques, habitats, and basic biology of birds. Emphasis on field identification of local species. (Lec. 2, Lab. 3) Pre: BIO 101.

**305 Principles of Wildlife Ecology and Management (3)**  
Application of ecological knowledge to the management of wild vertebrate populations and the habitat upon which they depend. (Lec. 3) Pre: BIO 101, 102, and 262.

**309 Wildlife Management Techniques Laboratory (3)**  
Application of practical field techniques for quantification and evaluation of wildlife and habitats. Methods of field identification, sampling, and data analysis. (Lab. 4, Project 3) Service learning. Pre: 186, and 305 or concurrent enrollment.

**312 Methods in Soil and Water Analysis (3)**  
Principles and exercises in the collection, analysis, and interpretation of soil and water data. Sampling and experimental design, chemical analysis techniques, data processing, and spatial analysis. (Lec. 1, Lab. 4) Pre: 212 and CHM 101 or 103 or permission of instructor. In alternate years. Next offered fall 2008.

**324 Biology of Mammals (3)**  
Classification, distribution, field study techniques, and basic biology of mammals. Emphasis on New England species. (Lec. 2, Lab. 3) Pre: BIO 101. In alternate years. Next offered spring 2009.

**351 Soil Morphology Practicum (2)**

Seven weeks of practical experience in the description of soil profiles under field conditions. Field trips to observe, describe, and interpret morphological properties as utilized in soil judging. (Practicum) Pre: 212 or permission of instructor. May be repeated for credit with permission of chairperson.

**361 Watershed Hydrology and Management (4)**

Study of the processes that govern the hydrology and quality of surface runoff and groundwater. Emphasis on watershed management and the impact of land use on water quality. (Lec. 3, Lab. 2) Pre: 212 or permission of instructor.

**395 Research Apprenticeship in Natural Resources Science (1-3)**

Supervised experience for qualified undergraduates who assist NRS faculty and graduate students in departmental research projects. Tasks may include literature review, research design, installation of sampling plots and equipment, laboratory analyses, data collection, and data analysis. (Practicum) Pre: sophomore to senior standing and permission of instructor. Limited to NRS majors. May be repeated for a maximum of 6 credits. S/U credit.

**397 Natural Resources Internship (1-6)**

Supervised work experience in forestry, wildlife management, soil science, water resources, environmental education, or related areas of natural resources management. (Practicum) Pre: 100, 212, and approval of chairperson. Open only to NRS majors. May be repeated for a maximum of 6 credits. S/U credit.

**402 Wildlife Biometrics (3)**

Presentation of statistical design and analysis of ecological field measurements. Emphasis on quantitative measurements and data analyses used in wildlife population research. Capstone. (Lec. 2, Lab. 3) Pre: BIO 262 and STA 308 or 409 or permission of instructor. In alternate years. Next offered in spring 2008.

**403 Wildlife Biometrics Field Investigations (1)**

Independent field study of wildlife populations using modern quantitative measurements and data analyses. Emphasis on experimental design, data collection and recording, statistical analysis, data interpretation, and reporting. (Practicum) Capstone. Pre: concurrent enrollment in 402. Not for graduate credit.

**406 Wetland Wildlife (3)**

Introduction to management of wetland wildlife. Emphasis on management techniques used for major wetland types, waterfowl, furbearers, and nongame wildlife. (Lec. 2, Lab. 3) Pre: BIO 262 or permission of instructor.

**407 Nongame and Endangered Species Management (3)**

Management programs for nonhunted species, basic conservation biology, and techniques used for management of endangered species. (Lec. 3) Pre: past or concurrent enrollment in 305.

**409 Concepts in GIS (3)**

Discussion of the unique properties of spatial data, GIS data structures, accessing existing spatial data, and applications of GIS in the environmental sciences. (Lec. 3) Pre: BIO 262 or permission of instructor. Not for graduate credit.

**410 Fundamentals of GIS (3)**

Emphasis on using a geographic information system (GIS) to create a geographically referenced spatial database, spatial topology, data visualization, computer-assisted map making, and spatial data query and analysis. (Lab. 6) Pre: past or concurrent enrollment in 409 or 509.

**412 Soil-Water Chemistry (3)**

Biogeochemistry of soil-water interactions. Soil composition, the exchange and sorption of elements, trace element behavior, redox reactions, and control of these factors on availability and loss. (Lec. 3) Pre: 212 and CHM 124 and 126 or permission of instructor. In alternate years. Next offered fall 2009.

**415 Remote Sensing of the Environment (3)**

Introduction to fundamentals of airborne and spaceborne remote sensing. Emphasis on remote sensing applications in terrestrial environmental and natural resources studies. (Lec. 2, Lab. 2)

**423 Wetland Ecology (4)**

Formation, development, and distinguishing features of inland and coastal wetlands. Topics include classification, geology, hydrology, soils, plant ecology, vegetation dynamics. Primary emphasis on wetlands of the glaciated Northeast. Capstone. (Lec. 2, Lab. 4) Pre: BIO 262, GEO 103, and concurrent enrollment in NRS 425 or 525.

**424 Wetlands and Land Use (4)**

Survey of wetland values, exploitation, current status, and legal protection. Emphasis on critical issues including wetland evaluation, impact assessment, mitigation procedures. Field trips provide examples of wetland use conflicts. Capstone. (Lec. 2, Lab. 4) Pre: 423 or permission of instructor.

**425 Wetland Field Investigations (1)**

Independent field study of a diverse freshwater wetland ecosystem, with emphasis on aerial photo-interpretation, wetland classification, and in-depth examination of glacial geology, hydrology, plant ecology, and soils. (Practicum) Capstone. Pre: concurrent enrollment in 423. Not for graduate credit.

**426 Soil Microbiology (3)**

Occurrence, metabolism, and ecology of soil microorganisms, with emphasis on nutrient cycling, soil

pathogens, transformation of organic and inorganic pollutants, and soil biotechnology. (Lec. 3) Pre: 212 or permission of instructor.

**440 Ecosystem Processes in Land and Water Management (3)**

Processes affecting the flows of energy, water, mass, and nutrients in terrestrial and aquatic ecosystems, with emphasis on linkages between ecosystems and management implications. (Lec. 3) Pre: 212 and BIO 262 and CHM 101 or 103 or permission of instructor.

**441 Methods in Ecosystem Analysis (2)**

Measurement of processes affecting the flow of energy, water, mass, and nutrients in terrestrial ecosystems of southern New England. Comparison of ecosystems and assessment of management impacts. (Lab. 4) Pre: 212 and BIO 262 and CHM 101 or 103 or permission of instructor.

**450 Soil Conservation and Land Use (3)**

Application of soil survey interpretation as a tool in soil and water conservation and land use planning. Implications of soil properties and problems for land use considered with emphasis on urbanizing situations. Capstone. (Lec. 3) Pre: 212 or permission of instructor.

**452 Soil, Water, and Land Use Investigations (1)**

Independent field and laboratory study of soil and water topics related to land use issues. (Practicum) Capstone. Pre: concurrent enrollment in 450.

**471 Soil Morphology and Mapping (3)**

A detailed study of the morphological properties of soils and their distribution on the landscape. Practical experience in describing soil profiles and preparing soil maps. (Lec. 1, Lab. 4) Pre: 212 or permission of instructor.

**475 Plant Nutrition and Soil Fertility**

See Plant Sciences 475.

**482 Innovative Subsurface Remediation Technologies**

See Geosciences 482.

**484 Environmental Hydrogeology**

See Geosciences 484.

**487 International Development Internship**

See Community Planning 487.

**491, 492 Special Projects (1-3 each)**

Special work to meet the needs of individual students in natural resources. (Independent Study) Pre: permission of chairperson.

**495 Advanced Natural Resources Apprenticeship (3)**

Collaboration with faculty and graduate students in departmental research, including supervision and mentoring of students enrolled in 395. Emphasis on independent decision making and leadership of un-

dergraduate research teams. Limited to majors. May be repeated for a maximum of 6 credits. (Practicum) Pre: 395 and permission of instructor. S/U only. Not for graduate credit.

**496 International Development Seminar**  
See Community Planning 495.**497 Natural Resources Cooperative Internship (6-12)**

Supervised work experience with a governmental agency, nongovernmental organization, or private company in the environmental field. (Practicum) Capstone. Pre: senior standing and permission of department. Not for graduate credit.

**498 Teaching Practicum in Natural Resources Science (1-3)**

Teaching experience for qualified undergraduates through actual involvement in planning and assisting in NRS courses. May include supervised participation in a discussion group, assisting in a laboratory or field course, or tutoring. (Practicum) Pre: senior standing, previous enrollment in the course to be taught, and permission of instructor. Limited to NRS majors. May be repeated for a maximum of 3 credits. Not for graduate credit. S/U only.

**499 Senior Thesis in Natural Resources Science (6)**

In-depth research or outreach effort reviewed by a faculty committee and culminating in a thesis written in scientific journal format. Oral presentation to the committee required. Capstone. (Independent Study) Pre: GPA of at least 3.25, successful completion of 491 or 492, and permission of department chairperson. Not for graduate credit.

**503 Wildlife Biometrics Field Investigations (1)**

Independent field study of wildlife populations using modern quantitative measurements and data analyses. Emphasis on experimental design, data collection and recording, statistical analysis, data interpretation, and reporting. (Practicum) Pre: concurrent enrollment in 402.

**505 Biology and Management of Migratory Birds (2)**

Current programs, problems, and techniques for managing migratory game and nongame birds. Emphasis on basic biology of the species, habitat management, and harvest management. (Seminar) Pre: 305 or permission of instructor. In alternate years. Next offered spring 2009.

**508 Seminar in Biological Literature**  
See Biological Sciences 508.**509 Concepts of GIS and Applications in Environmental Science (3)**

Unique properties of spatial data, geographic information system (GIS) data structures, accessing existing spatial data, and applications of GIS in the environmental sciences. Uses in ecology, conservation, soil science, geohydrology, and wildlife

management. (Lec. 3) Pre: BIO 262 or permission of instructor.

**510 Soil-Water Relations (3)**

Processes governing water flow and availability in unsaturated and saturated soil. Emphasis on soil-water-plant relationships with applications to watershed management and hydrology. (Lec. 2, Lab. 3) Pre: 212, 361, or permission of instructor.

**516 Remote Sensing in Natural Resources Mapping (3)**

Digital remote sensing in environmental and natural resource studies. Emphasis on satellite remote sensing image rectification, georeferencing, classification, and integration with GIS. (Lec. 2, Lab. 2) Pre: 415 or permission of instructor.

**520 (or EEC 524) Quantitative Techniques in Natural Resource Research (3)**

Research design, database management, and analysis and interpretation of natural resource data. Emphasis on hands-on experience of quantitative and computerized techniques commonly used by natural resource scientists. (Lec. 2, Lab. 2) Pre: STA 308 and permission of instructor.

**522 Advanced GIS Analysis of Environmental Data (3)**

Discussion and application of terrain modeling, spatial statistics, proximity analysis, remote sensing/GIS linkages, and environmental data integration. Emphasis on ecological data at watershed/landscape scales. (Lec. 1, Lab. 6) Capstone. Pre: 410 or permission of instructor.

**524 Application of Advanced Spatial Analysis (1)**

Independent application of spatial data analysis to derive solutions to environmental problems, with emphasis on GIS data integration, vector and raster modeling, and visualization of analytical and quantitative results. (Practicum) Pre: concurrent enrollment in 522. Capstone.

**525 Wetland Field Investigations (1)**

Independent field study of a diverse freshwater wetland ecosystem, with emphasis on aerial photo-interpretation, wetland classification, and in-depth examination of glacial geology, hydrology, plant ecology, and soils. (Practicum) Pre: concurrent enrollment in 423.

**526 Microbial Ecology of Soils and Sediments (3)**

Occurrence and activity of microorganisms in soils and sediments, including wetlands. Environmental physiology of microbes; habitat interactions; methods of study; importance of microbial processes to ecosystem productivity, pollutant degradation, and atmospheric chemistry. (Lec. 3) Pre: 212, MIC 211, or permission of instructor.

**527 Marine Protected Areas: An Interdisciplinary Analysis**

See Marine Affairs 527.

**532 (or EEC 542) Conservation Biology and Resource Economics (2)**

Examination of different components of conservation of biological diversity. Topics include minimum viable populations, ecology and economics of reserve design, reintroductions, causes of extinction, and the ecosystem conservation strategies. (Seminar) Pre: BIO 262, EEC (REN) 105 or permission of instructor. In alternate years. Next offered spring 2008.

**533 Landscape Pattern and Change (3)**

Remote sensing perspective of landscape characterization; landscape dynamics; spatiotemporal land-use and land-cover change; modeling and analysis of landscape by integration of remote sensing, GIS, GPS, and in situ data. (Lec. 2, Lab. 2) Pre: 415 or permission of instructor.

**534 Ecology of Fragmented Landscapes (2)**

Presentation of the concepts of landscape ecology with emphasis on populations of plants and animals in fragmented habitats. Topics discussed include habitat corridors, fluxes of energy and species along habitat edges, shape analysis, and stability of populations in habitat patches. (Lec. 2) Pre: BIO 262 or permission of instructor. In alternate years. Next offered spring 2009.

**538 Physiological Ecology of Wild Terrestrial Vertebrates (3)**

Relationships between animal physiology and the ecology and dynamics of wild vertebrate populations, including birds, mammals, reptiles, and amphibians. (Lec. 3) Pre: 305 or permission of instructor.

**551 Seminar in Marine Ecology (1)**

See Biological Sciences 551.

**555 Applied Coastal Ecology (2)**

Resource management problems in coastal national parks. Topics include air and water pollution, barrier island erosion, deer overpopulation, Lyme disease, and ecosystem restoration. Examples of conflicting land-management mandates and research needs discussed. Optional field trips. (Lec. 2) Pre: advanced course work or experience in topical fields or permission of instructor. Offered in fall of even-numbered years.

**567 Soil Genesis and Classification (3)**

Development of soils as influenced by physical, chemical, biological, and climatic factors. Processes of soil formation presented relative to soil taxonomy and geographic distribution. (Lec. 3) Pre: 471 or permission of instructor. Next offered spring 2009.

**568 Recent Advances in Natural Resources Science (3)**

Critical analysis and presentation of technical reports on recent advances in natural resources science. Topics will vary according to instructor and background of students. (Lec. 3) Pre: graduate standing or permission of instructor.

**583 Innovative Subsurface Remediation Technologies**  
See Geosciences 582.

**584 Environmental Hydrogeology**  
See Geosciences 584.

**591, 592 Special Problems (1-3 each)**  
Advanced independent research projects supervised by members of the research staff and unrelated to Master's or Doctoral research. Projects developed to meet individual needs (Independent Study) Pre: permission of chairperson.

**600 Graduate Seminar in Natural Resources (1)**  
Presentation of proposed, ongoing, or completed research by NRS graduate students. Discussion among graduate students, faculty, and staff, with emphasis on research design, methods, and interpretation of results. (Seminar) Pre: graduate standing in NRS. All graduate students must enroll at least twice; full-time students are expected to enroll each spring. S/U credit.

## New England Studies (NES)

*Coordinator:* Professor Oronato

**300 The New England Experience (3)**

Life in New England, past and present, through varying disciplines focusing on a new topic each semester. (Lec. 3) May be repeated for credit with different emphasis.

**400 Special Topics in New England Studies (1-3)**  
Specialized topics in the study of New England offered by specialists in the field. (Seminar) May be repeated for credit with different topics.

## Nonviolence and Peace Studies (NVP)

*Coordinator:* Professor Collyer (Psychology)

**200 Nonviolence and Peace Studies Colloquium (1)**

A series of speakers introduce a range of issues in nonviolence and peace studies. (Lec. 1)

## Nursing (NUR)

*Dean:* Professor Joseph

**103 Professional Practice in Health and Illness (3)**  
Introduction to the concept of professional helping including problem management, communication, the teaching process, and critical decision making. Analysis of ecosystem influences and cultural variability in health, illness, and health care. (Lec. 3) Pre: NUR code or WNUR code or permission of instructor.

**150 Human Sexuality (3)**  
Interdisciplinary approach to the study of individual and societal determinants in the development, in-

tegration, and expression of human sexuality and a code of sexual behavior. (Lec. 3/Online) (S) [D]

**203 Comprehensive Health Assessment (3)**  
Introduces the techniques of history taking and systematic health assessment of individuals across the life span. Recognition of normal findings is emphasized. (Lec. 2, Lab. 3) Pre: BIO 242 and 244 and NUR 103 and CHM 124 or MIC 201 and any WRT course (104, 105, 106, or higher if the student tests out) and PSY 113 and nursing math test.

**213 Pathophysiology (3)**  
Examination of basic concepts of pathophysiology and the related levels of prevention, etiology, pathogenesis, and clinical manifestations underlying alterations according to biological processes across the life span. (Lec. 3) Pre: MIC 201, NUR 203.

**233 Foundations of Nursing Practice with Older Adults (3)**

Foundational concepts of professional nursing practice emphasizing levels of prevention and nursing care focusing on the older adult in wellness and illness. (Lec. 3) Pre: 203, NFS 207, PSY 232, and MIC 201.

**234 Practicum in Foundations of Nursing with Older Adults (3)**

Practicum emphasizing foundational concepts of basic nursing and levels of prevention focusing on the older adult client in wellness and illness. (Lab. 9) Pre: previous or concurrent enrollment in 233.

**246 Conceptual Bases of Professional Nursing (3)**

Overview and synthesis of concepts essential to development of the professional nursing role. Primary emphasis on expanding and refining the theoretical bases for decision making and nursing strategies in client care. (Lec. 3) For R.N. students only.

**253 Nursing Research (3)**

Introduction to principles of scientific inquiry and analytical thinking common to problem solving in nursing. Research process and implications to knowledge development, utilization, and evidence-based practice are explored. (Lec. 3) Pre: STA 220 or PSY 300 or permission of instructor.

**323 Medical-Surgical Nursing (6)**

Concepts of medical-surgical nursing with emphasis on nursing strategies and utilizing levels of prevention in management of adults with acute and chronic illness, including the impact of illness on their families. (Lec. 6) Pre: 213 and 234 and 253.

**324 Medical-Surgical Nursing Practicum (6)**

Application of medical-surgical nursing strategies in the management of adults with acute and chronic illness, and the impact on their families. (Lab. 18) Service learning. Pre: credit or concurrent enrollment in 323.

**333 Psychiatric Mental Health Nursing (3)**

Nursing strategies to support and care for persons with limitations in psychosocial functioning in the context of family and community; psychiatric and/or mental health. (Lec. 3) Pre: 324 and BPS 333.

**334 Practicum in Psychiatric Mental Health Nursing (3)**

Application of the nursing process and the use of self as the therapeutic agent with individuals and groups of clients. Emphasis on developing nursing strategies for psychiatric and/or mental health care. (Lab. 9) Service learning. Pre: credit or concurrent enrollment in 333.

**343 Nursing in Childbearing and Reproductive Health (3)**

Emphasis on the nursing management of childbearing families and reproductive health issues across the life span. (Lec. 3) Pre: BPS 333 and credit or concurrent enrollment in NUR 334.

**344 Practicum in Childbearing and Reproductive Health Nursing (3)**

Application of the nursing process in the care of individuals and families with childbearing and reproductive experiences. (Lab. 9) Service learning. Pre: credit or concurrent enrollment in 343.

**346 Practicum in Nursing Management of Clients (3)**

Practicum in development of leadership and management strategies for registered nurses in selected clinical settings. Emphasis on role development and analysis of issues related to client care and nursing practice. (Practicum) Service learning. Pre: 246 and 253.

**349 Aging and Health (3)**

Examines normal age changes, effects on health, health problems, and interventions to achieve optimal wellness. Utilizes a systems perspective emphasizing healthy, positive aging and incorporates an interdisciplinary approach to care. (Lec. 3)

**360 Impact of Death on Behavior (3)**

Seminar to explore the human experience of dying and the issue of quality of life. Group discussion focuses on the effect that individual and social values and medical and social structures have on one's grief response and bereavement process. (Lec. 3) (L) [D]

**390 Directed Study (1-3)**

Research study or individual scholarly project relating to the nursing major. Faculty guidance in problem delineation and in development, implementation, and evaluation of the project. (Independent Study) Pre: admission to the College of Nursing and prior faculty approval. S/U credit.

**433 Nursing of Children (3)**

Examines theories and strategies that promote or restore health and prevent or manage illness in infants, children, and adolescents; includes family-centered

concepts and supportive management during end-of-life care. (Lec. 3) Pre: 334 and 344.

**434 Practicum in Nursing of Children (3)**

Synthesis of pediatric knowledge and the application of the nursing process in the care of children and their families. (Lab. 9) Pre: credit or concurrent enrollment in 433. Service learning.

**443 Community Health Nursing (3)**

Analysis of concepts related to public health and nursing care of clients in the home and the community with emphasis on vulnerable and high-risk populations. (Lec. 3) Pre: credit or concurrent enrollment in 434 (246 and 253 for R.N. students).

**444 Practicum in Community Health Nursing (3)**

Application of the nursing process in the home and community with emphasis on vulnerable and high-risk populations. In-depth analysis of a selected population, including utilization of epidemiological and public health principles. (Lab. 9) Pre: credit or concurrent enrollment in 434 and 443 (246 and 253 for R.N. students). Service learning.

**446 Directed Study for Registered Nurse Students (1-4)**

Clinical advanced study or individual scholarly project related to the nursing major. Faculty guidance in problem delineation and in development, implementation, and evaluation of the project. (Independent Study) Pre: 246 and 253. Not for graduate credit.

**459 Perspectives on Male and Female Sexuality (3)**

Examination of the multifaceted perspectives (somatic, emotional, ethical, cultural) on male and female sexuality. Topics include history and recent developments in sexology research, therapy, role and gender issues. (Lec. 3) Pre: 150 or permission of instructor.

**463 Advanced Medical-Surgical Nursing (3)**

Study of nursing care problems and nursing management of adults with acute and chronic complex illnesses, including the impact on their families.

(Lec. 3) Pre: 444.

**464 Practicum in Advanced Medical-Surgical Nursing (3)**

Application of the nursing process to adults across the life span with acute and chronic complex illnesses including the impact on their families in selected clinical situations. (Lab. 9) Pre: credit or concurrent enrollment in 463.

**467 Independent Study in Human Sexuality (2-6)**

A specifically designed learning experience for the theoretical study of human sexuality and related practice strategies. (Independent Study) Pre: 150 or equivalent; permission of instructor.

**468 Practicum in Theories of Human Sexuality (2-6)**

A specifically designed practicum involving the application of theory and development of practice

strategies in specific areas within the field of human sexuality. (Practicum) Pre: 150 and 467 or equivalent; permission of instructor.

**474 Leadership in Contemporary Nursing Practice (3)**

Examination of theories, issues, and concepts related to contemporary nursing practice. Emphasis on the application of principles of leadership and professionalism in a clinical experience. (Lec. 1, Lab. 6) Pre: credit or concurrent enrollment in 464.

**500 General Study of Nursing Knowledge for Nursing Practice (4)**

Introduction to the essential features of nursing knowledge and its development in relation to nursing practice. Study of approaches to nursing knowledge development, and major conceptual/theoretical knowledge in nursing. (Lec. 3, Lab. 2) Pre: graduate standing.

**503 Expanded Nursing Assessment Skills (3)**

Expansion of nursing assessment skills including health history taking and physical, psychological, and social assessment skills. Specific physical assessment skills included are inspection, auscultation, percussion, and palpation. (Lec. 2, Lab. 1) Pre: enrollment in the M.S. program in nursing.

**504 Expanded Nursing Assessment Skills: Pediatrics (1)**

Application of expanded nursing assessment skills to children. Includes assessment of growth and development, psychosocial, cognitive, and physical well-being of children of all age groups. (Lec. 1) Pre: credit or concurrent enrollment in 503 or permission of instructor.

**505 Nursing Research (3)**

An overview and analysis of current research in nursing with special focus on patient care. Students will design a research project. (Seminar) Pre: a course in statistics, credit or concurrent enrollment in 500, or permission of instructor.

**506 Independent Study in Nursing (2-6)**

Intensive study of a specific area of interest, a problem or issue in nursing under guidance of the faculty. (Independent Study) Pre: permission of graduate faculty.

**507 Theories of Practice for Nursing (3)**

Analysis of general theories of practice for nursing and their applicability to various areas of clinical practice. (Seminar) Pre: 500 or permission of instructor.

**508 Physical Assessment of Older Adults (1)**

Applies a developmental framework, expands and refines history taking and physical exam techniques learned in 503 and utilizes additional assessment tools to conduct a comprehensive evaluation of older adult clients. (Lec. 1) Pre: concurrent or prior completion of 503 and permission of instructor.

**510 Nursing Leadership in the Health Policy Process (3)**

Study of nurses' participation in the health policy process. Focus on theories for the development of nursing leaders. Analysis and application of creative nursing strategies for the enhancement of health care. (Seminar) Pre: enrollment in the M.S. program in nursing.

**511 Advanced Mental Health Nursing I (3)**

Investigation of theories of healthy and psychopathological patterns of individual behavior from a mental health perspective. (Seminar) Pre: 500 and credit or concurrent enrollment in 512.

**512 Practicum in Advanced Mental Health Nursing I (3)**

Field experience to develop competence in the practice of advanced mental health nursing. Emphasis on application of relevant theories in solving individuals' mental health problems. (Practicum) Pre: 500 and concurrent enrollment in 511.

**515 Practicum in Advanced Psychiatric Mental Health Nursing (3)**

Field experience to further develop clinical competence in the practice of mental health nursing. Emphasis is placed on the utilization of intervention strategies based on knowledge of psychiatric illness. (Practicum) Pre: 511, 512.

**516 Advanced Mental Health Nursing II (3)**

Theoretical analysis of current modes of advanced mental health intervention in order to explain strategies for solution of family, group, and community problems. (Seminar) Pre: 511, 512, and concurrent enrollment in 514.

**517 Practicum in Advanced Psychiatric Mental Health Nursing III (3)**

Field experience to develop clinical competence in the practice of advanced mental health nursing in providing client care, consultation, education, and research. (Practicum) Pre: 515.

**519 Psychopharmacotherapeutics for Advanced Practice Nursing (3)**

Integration of psychopharmacotherapeutics and decision making with human pathophysiology utilizing case management approach to prescription of medications. Discussion of legal, ethical, and professional issues related to advanced practice role. (Seminar) Pre: graduate standing in nursing or permission of instructor.

**520 Graduate Study Seminar (1)**

A seminar designed to facilitate the synthesis and examination of information learned in the master's program about nursing knowledge development, advancement of nursing practice, and leadership role development. (Seminar) Pre: completion of 30 graduate program credits and concurrent enrollment in the final sequence of concentration courses. S/U credit.

**523 Contemporary Thanatology (3)**

Interdisciplinary approach to trends, problems, theories, and strategies in thanatology. Explores effects of professional's personal beliefs and attitudes on care provided to dying clients across the life span and their families. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

**524 Exploring Loss Through Creative Arts Therapy (3)**

Exploration and assessment of the merits of incorporating creative arts processes (imagery, story, metaphor, music, and movement) with individuals who are experiencing loss, grief, and dying. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

**525 Spirituality of Loss and Death for the Helping Professions (3)**

Examination of major belief systems and spirituality during loss, death, and grief. Emphasis on spiritual issues and ethnicity, culture, gender, and developmental stage. Role of professional dealing with spiritual concerns. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

**526 Loss Across the Life Span (3)**

Content provides a basis both for personal development and professional growth. Personal experience, selected readings, and personal reflections will provide direction for examining the multidimensional aspects of loss. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

**527 Symptom Management in End-of-Life Care (3)**

Principles of nursing care at the end-of-life. Strategies for assessing and managing symptoms along with complementary therapies across age groups. (Lec. 3) Pre: senior standing in nursing or registered nurse (others by permission of instructor).

**529 Topics in Thanatology (1-3)**

Selected areas of study pertinent to loss, dying, and grief. Instruction may be offered in class seminar or clinical settings according to specific needs and purposes. May be repeated for credit with a change in topic. (Seminar) Pre: baccalaureate degree or senior standing with permission of instructor.

**531 Primary Health Care Nursing I (3)**

Theoretical knowledge and skills for the development of nursing strategies in analyzing, managing, and preventing health-related problems common to primary health care clients. (Seminar) Pre: 500, 503, and 504.

**532 Practicum in Primary Health Care Nursing I (3)**

Clinical application of theoretical knowledge and skills as presented in 531. Service learning. (Practicum) Pre: concurrent enrollment in 531.

**533 Primary Health Care Nursing II (3)**

Theoretical study for the development of increased nursing competency in primary care practice. Emphasis on health care strategies to assist individuals and families in coping with health-related problems. (Seminar) Pre: 531, 532, and concurrent enrollment in 534.

**534 Practicum in Primary Health Care Nursing II (6)**

Application of theoretical knowledge and skills for the development of nursing strategies for health promotion and management of health-related problems common to families. (Practicum) Service learning. Pre: 531, 532, and concurrent enrollment in 533.

**535 Pathophysiology for Advanced Practice Nurses (3)**

An in-depth study of pathophysiological phenomena across the life span from the biological life processes perspective. Clinical decision making based on the synthesis of this knowledge and current research findings will be explored. (Lec. 3) Pre: admission to graduate program in nursing or permission of instructor.

**538 Learning Theories and Strategies for Health Professionals (3)**

The study of selected learning theories and strategies and their application in health professions. Emphasis will be on expanding the scope of teaching as professionals. (Lec. 3) Pre: 500 or permission of instructor.

**539 Application of Learning Theories in Professional Practice (3)**

Field project in the application of learning theories and strategies in professional practice. Emphasis on gaining knowledge of the application of strategies and outcome evaluation in practice and educational settings. (Practicum) Pre: credit or concurrent enrollment in 538 or permission of instructor.

**541 Advanced Study of Teaching in Nursing Education and Practice (3)**

Advanced study of educational theories and strategies having application in nursing education and practice. Emphasis will be on role development, instructional design, methods, and evaluation. (Lec. 3) Pre: 507, 539, or permission of instructor. In alternate years. Next offered 2007-08.

**542 Practicum in Nursing Education and Practice (6)**

A field experience designed to develop competence in teaching. Emphasis is placed on the instructional design component and the utilization of strategies based on theoretical knowledge. (Practicum) Pre: permission of instructor or credit or concurrent enrollment in 541. In alternate years. Next offered 2007-08.

**549 Evidence-Based Strategies in Health Care Program Evaluation (3)**

Prepares post-baccalaureate health care professionals to use evidence-based methods, with an emphasis on evaluation research methods, for developing and evaluating clinical programs in health care organizations. (Lec. 3)

**550 Theoretical Study of the Clinical Nurse Leader Role (3)**

In-depth study of concepts of leadership central to hospital-based, unit level practice of the CNL: advanced organizational communication, horizontal leadership, lateral integration of care, role analysis and implementation. (Seminar) Pre: 505, 507, 510 or permission of instructor.

**551 Theoretical Study of Nursing Administration (3)**

Study of relation of nursing philosophy, organizational theories, and practice environment to nursing administration. Emphasis on theories, concepts, and issues that explain and advance strategies in nursing administration. (Seminar) Pre: 505, 507, two restricted electives, or permission of instructor. In alternate years. Next offered 2007-08.

**552 Practicum in Nursing Administration (6)**

Field experience in nursing administration. Emphasis on role development and the examination, development, and implementation of strategies in nursing administration. (Practicum) Pre: credit or concurrent enrollment in 551. In alternate years. Next offered 2007-08.

**555 Advanced Gerontological Nursing I (3)**

Study of the theories of aging, age-related changes, and health needs of healthy older adults and those with minimal functional limitations using problem-strategy-theory approaches to nursing knowledge. (Seminar) Pre: 500 or permission of instructor. In alternate years. Next offered 2007-08.

**556 Practicum in Advanced Gerontological Nursing I (3)**

Study of major problems and issues in advanced gerontological nursing through provision of nursing care to healthy older adults and those with minimal functional limitations. (Practicum) Pre: credit or concurrent enrollment in 555. In alternate years. Next offered 2007-08.

**557 Advanced Gerontological Nursing II (3)**

Analysis of theoretical and empirical knowledge necessary for care of frail older adults and those with complex health problems and functional limitations within acute and long-term care settings. (Seminar) Pre: 505, 507, 556. In alternate years. Next offered 2008-09.

**558 Practicum in Advanced Gerontological Nursing II (6)**

Development, evaluation, and revision of theory-based strategies for selected nursing problems

through provision of nursing care to older adults with multiple chronic and acute illnesses and functional limitations. (Practicum) Pre: previous or concurrent enrollment in 557. In alternate years. Next offered 2008-09.

**560 Ethical Theories, Nursing Practice, and Health Care (3)**

Analysis of philosophical positions, ethical theories, and moral principles important to professional nurses in their clinical, educative, and administrative practice. (Seminar) Pre: B.S. or B.A. in a health-related field, one course in philosophy and ethics, or permission of instructor.

**561 Gerontological Nurse Practitioner I (3)**

Theories of aging, age-related changes, and health problems of older adults focusing on assessment, diagnosis, therapeutic and preventive strategies with healthy older adults and those with minimal functional limitations. (Lec. 3) Pre: 500, 508, and permission of instructor.

**562 Gerontological Nurse Practitioner I Practicum (3)**

Application of theoretical knowledge and skills for development of gerontological nurse practitioner strategies emphasizing health promotion and illness management of healthy older adults, those with minimal functional limitations, and families. (Practicum). Pre: credit or concurrent enrollment in 561 or permission of instructor.

**563 Gerontological Nurse Practitioner II (3)**

Theoretical knowledge and skills for development of strategies for care of older adults with complex health problems and functional limitations, at the individual, family, group, organization, and community level. (Lec. 3) Pre: 562.

**564 Gerontological Nurse Practitioner II Practicum (6)**

Development of gerontological nurse practitioner competency in care of older adults with complex health problems and functional limitations focusing on strategies at the individual, family, group, organization, and community level. (Practicum) Pre: previous or concurrent enrollment in 563.

**571 Theoretical Study of Well Women's Health Care (3)**

A study of major theories, client issues, and nurse-midwifery strategies used in the care of well women seeking gynecological health care. (Seminar) Pre: 500.

**572 Practicum: Theoretical Study of Well Women's Health Care (3)**

Clinical application of the theoretical knowledge and interventions in the care of well women in ambulatory health care settings. (Practicum) Pre: credit or concurrent enrollment in 571.

**573 Theoretical Study of the Childbearing Woman and Her Family (3)**

Within a systems perspective, theories are utilized to examine client issues related to the normal childbirth experience. Knowledge and skills relevant to nurse-midwifery strategies of normal childbirth are emphasized. (Seminar) Pre: credit or concurrent enrollment in 571, 572; concurrent enrollment in 574.

**574 Practicum: Theoretical Study of the Child-bearing Woman and Her Family (3)**

Theoretical application of nurse-midwifery strategies during the normal childbirth experience. Knowledge and skills relevant to patient care are emphasized. (Practicum) Pre: concurrent enrollment in 573.

**575 Advanced Practice: Collaborative Nurse-Midwifery (3)**

Within a systems perspective, theories are utilized to examine client issues of the at-risk childbirth experience. Expanded nurse-midwifery strategies related to collaborative practice within the community are emphasized. (Seminar) Pre: concurrent enrollment in 576.

**576 Advanced Practice: Collaborative Nurse-Midwifery Practicum (6)**

Field study of the clinical application of theoretical knowledge and skills in the at-risk childbirth experience. Use of collaborative practice and the management process within communities is emphasized. (Practicum) Pre: concurrent enrollment in 575.

**577 Practice and Integration of Nurse-Midwifery (5)**

Comprehensive and practical application of clinical skills and theoretical knowledge in nurse-midwifery. Complete integration of the nurse-midwifery role with the client, family, and community. (Practicum) Pre: 575 and 576.

**582 Pharmacotherapeutics in Advanced Practice Nursing (3)**

Integration of pharmacotherapeutic and decision-making theories with human pathophysiology. Case management approach to the prescription of medications in primary health care across the life span. (Lec. 3) Pre: matriculation into master's program in nursing or permission of instructor.

**584 Psychopharmacotherapeutics for Child/ Adolescent APRNs (3)**

Integration of psychopharmacotherapeutics and decision-making theories with human pathophysiology utilizing case management approach to prescription of medications. Discussion of ethical, legal, professional issues related to APRN role. (Lec. 3) Pre: graduate standing or permission of instructor.

**585 Advanced Child/Adolescent Psychiatric Mental Health Nursing I (3)**

Theoretical knowledge and skills for assessing, preventing, and diagnosing common clinical problems emergent in the practice of child and adolescent

advanced psychiatric mental health nursing. (Lec. 3) Pre: 500 and 584; 586 must be taken concurrently.

**586 Practicum in Advanced Child/Adolescent Psychiatric Mental Health Nursing I (3)**

Clinical practicum to develop competence in the assessment and diagnosis of children and adolescents with psychiatric mental health problems. (Lab. 9) 585 must be taken concurrently.

**587 Advanced Child/Adolescent Psychiatric Mental Health Nursing II (3)**

Analysis and evaluation of theories and concepts that serve as the basis for psychiatric mental health nursing strategies for children and adolescents who present with complex psychiatric mental health problems. (Lec. 3) Pre: 586; 588 must be taken concurrently.

**588 Practicum in Advanced Child/Adolescent Psychiatric Mental Health Nursing II (3)**

A clinical practicum to develop competence in the treatment of children and adolescents with complex psychiatric mental health problems. (Lab. 9) 587 must be taken concurrently.

**590 Directed Study and Practice in Advanced Clinical Nursing (3)**

In-depth and supervised clinical practice in a specialized area of nursing. (Independent Study) Service learning. Pre: graduate standing and permission of graduate faculty.

**601 Foundations of Nursing Science (3)**

Analysis of the nature of nursing knowledge from the historical and epistemological perspectives. Focus on examination of theoretical, ethical, and methodological foundations of the development of nursing science. (Seminar) Pre: enrollment in the Ph.D. program in nursing.

**602 Construction of Nursing Theory I: Inductive Process (4)**

Study of inductive approaches to generating theory relevant to nursing science. Examination of multi-disciplinary strategies for generation of theory from field data. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 601, or permission of instructor.

**603 Construction of Nursing Theory II: Deductive Process (3)**

Study of deductive theory-building as applied to nursing science. Focus on the nature of deductive theories and the application of deductive process to nursing theory construction. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 601, or permission of instructor.

**621 Nursing Theory and Research in the Client Domain (3)**

In-depth, comparative analysis of existing nursing theories and research relevant to the client domain. Development of a research proposal for validation of a selected nursing theory. (Seminar) Pre: doctoral

standing in nursing and completion of core courses in nursing.

### **631 Nursing Theory and Research in the Client-Nurse Domain (3)**

Study of theoretical and research work in the client-nurse domain. Formulation and testing of hypotheses dealing with client-nurse phenomena. (Seminar) Pre: doctoral standing in nursing and completion of core courses in nursing.

### **641 Nursing Theory and Research in the Practice Domain (3)**

In-depth analysis of theoretical and research work in the nursing domain of practice. The expansion and refinement of knowledge for nurse-system phenomena of the practice domain. (Seminar) Pre: doctoral standing in nursing and completion of core courses in nursing.

### **651 Advanced Methods in Nursing Research I (3)**

In-depth study of theories and methods in sampling, research design, data collection, and data analysis, and their application to qualitative research in nursing. Emphasis on qualitative data collection methods. (Seminar) Pre: enrollment in the Ph.D. program in nursing, advanced statistics course, or permission of instructor.

### **652 Advanced Methods in Nursing Research II (3)**

In-depth study of application of theories and methods in sampling, research design, data collection, and data analysis for quantitative and evaluative research in nursing. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 651, or permission of instructor.

### **653 Measurement and Instrument Development in Nursing Research (3)**

In-depth study of theories and methods relevant to measurement and instrument development for nursing and health sciences. Emphasis on measurement as an ongoing process of successive approximation, refinement, and validation. (Seminar) Pre: completion of 652 or permission of instructor.

### **660 Philosophical Foundations for Health Care Research (3)**

Presentation of the historical and philosophical basis of contemporary health care research. (Seminar) Pre: enrollment in the Ph.D. program in nursing.

### **671 Role Development in Nursing Research (3)**

In-depth examination of the role of the nurse researcher as a member of a multidisciplinary team and in academia. Emphasis on theories and issues related to researcher role development. (Seminar) Pre: doctoral standing in nursing, 601, 602 or 603, and 660.

### **699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**995 Reading and Research in Nursing (1-6)**  
Advanced work by individual student on a selected issue in nursing under the direction of a faculty member. (Independent Study) Pre: graduate standing. S/U credit.

## **Nutrition and Food Sciences (NFS)**

*Chairperson: Professor English*

### **110 Introduction to Nutrition and Dietetics (1)**

Description of the educational and experiential requirements of a registered dietitian and a nutritionist. Career opportunities discussed. Designed for students entering the nutrition and dietetics major. (Lec. 1)

### **207 General Nutrition (3)**

Fundamental concepts of the science of nutrition with application to the individual, community, and world. Proficiency test available. (Lec. 3) (N)

### **227 Scientific Principles of Food I (3)**

Chemical, physical, sensory, and nutritional properties of food related to processes used in food preparation. Emphasis on water, carbohydrates, lipids, and the sensory evaluation of food. (Lec. 2, Lab. 3) Pre: 207, CHM 124.

### **236 Computer Applications in Nutrition and Food Science (1)**

Basic computer operation and the use and comparison of microcomputer software programs in food science and nutrition. (Lab. 2) Pre: 207.

### **276 Food, Nutrition, and People (3)**

Practical applications of nutrition policy. Current issues in the socioeconomic, cultural, and psychological influences on food and nutrition behavior. (Lec. 3) Pre: 207.

### **337 Scientific Principles of Food II (3)**

Chemical, physical, sensory, and nutritional properties of food related to processes used in food preparation. Emphasis on proteins, scientific principles of baked goods, and research applications. (Lec. 2, Lab. 3) Pre: 227.

### **360 Nutrition in Exercise and Sport (3)**

Relationships among diet, physical activity, health, and performance. Metabolism and requirements of nutrients in physically active individuals. Applications to energy balance, body composition, various population groups, fitness levels, and conditions. (Lec. 3) Pre: 207, KIN 275 and/or BIO 242.

### **375 Food-Service Management I (3)**

Administrative responsibilities in planning, organizing, staffing, leading, and evaluating food-service systems. Emphasis on menu planning, purchasing, and food cost control. (Lec. 3) Pre: 207, 227 or permission of instructor.

### **376 Food-Service Management II (4)**

Administrative responsibilities in planning, organizing, staffing, leading, and evaluating food-service systems. Emphasis on food production and labor cost control. Experience in a food-service facility. (Lec. 3, Lab. 2) Pre: 375.

### **386 Food Sanitation (3)**

Principles of sanitation as applied to the food service and food-processing industry. Emphasis on bacteria and other organisms causing food-borne illness, pest control, sanitation, and safe food handling. (Lec. 3) Pre: MIC 201, or permission of instructor.

### **394 Nutrition in the Life Cycle I (3)**

Current issues in maternal, child, and adolescent nutrition with emphasis on nutrient requirements and food habit development; delivery of cost-effective nutrition services and the application of the principles of menu planning. (Lec. 3) Pre: 276. Service learning.

### **395 Nutrition in the Life Cycle II (3)**

Current issues in nutrition for the adult and older adult with emphasis on nutrient requirements related to physiological changes; screening initiatives; program development to reduce risk of nutrition-related diseases. (Lec. 3) Pre: 276, 394. Service learning.

### **410 Professional Issues in Nutrition and Dietetics (1)**

Professional issues in the field of nutrition and dietetics. Topics include career choices; evaluation of journal articles; and registration, licensing, and certification. (Lec. 1) Pre: 395 and senior standing. Not for graduate credit.

### **431 Chemistry of Food and Nutraceuticals (3)**

Chemical and functional properties of major food components, changes in nutritional properties during processing and storage, and nutraceuticals and functional foods. (Lec. 3) Pre: CHM 124 and 227 or permission of instructor.

### **432 Food Processing (3)**

Changes involved in behavior of foods in unit operations such as fermentation, canning, chilling, freezing, dehydration, and concentration for processing and preservation. (Lec. 2, Lab. 3) Pre: 431 and MIC 211.

### **434 (or AFS 434) Aquatic Food Quality and Processing (4)**

Physicochemical and nutritional characteristics of aquatic fish and shellfish; quality assessment and control; principles and applications in handling and processing fish from harvesting to production; and discussion of current issues. (Lec. 3, Lab. 3) Pre: 342 or permission of instructor.

### **435 Food Product Development (4)**

Fundamentals of food product development from concept to production. Product design, formulation, basics of ingredient functions, manufacturing prod-

uct evaluation, and safety and regulation. Individual product development project assignment. (Lec. 3, Lab. 3) Pre: 337 or 431 or permission of instructor.

#### 441 Advanced Human Nutrition (3)

Comprehensive study of principles of nutrition. Physiological and metabolic processes and interrelationships involving nutrients. Factors affecting nutritional health status and requirements during life span. (Lec. 3) Pre: 207, BIO 242, BCH 311, or permission of instructor.

#### 443 Nutrition Assessment (3)

Evaluation of nutritional status by dietary assessment, anthropometric measures, and nutrition-related health indicators. Practice in body composition assessment, interpreting dietary and laboratory data, and nutrition counseling. (Lec. 2, Lab. 2) Pre: 207, 394, 395 or permission of instructor.

#### 444 Nutrition and Disease (3)

Effects of disease on metabolism and nutritional requirements; implications for dietary change, and factors affecting acceptance of such change. (Lec. 3) Pre: 441, 443 or enrollment in Pharm.D. program.

#### 451, 452 Field Experience in Nutrition and Food Science (1-3 each)

Individual supervised field experience and seminar in community, educational, government, health-oriented, and commercial activities and services related to food science and nutrition. (Practicum) Pre: 394, 395 or permission of instructor. May be repeated for a maximum of 6 credits. Not for graduate credit in food science and nutrition.

#### 458 Nutrition Education (3)

Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research in and evaluation of nutrition education. (Lec. 3) Pre: 395, 441, or permission of instructor.

#### 491, 492 Special Projects (1-3 each)

Advanced work under supervision of a staff member. Arranged to suit individual requirements of student. (Independent Study) Pre: senior standing and permission of chairperson.

#### 502 Physical Chemistry and Properties of Food (3)

Principles of physical chemistry and properties of food material. Analysis of changes in physical properties and interaction of food components during physical processing. Application of underlying principles in food formulation and processing. (Lec. 2, Lab. 2) Pre: 431 or permission of instructor.

#### 505 Methods in Nutrition Research (3)

Theory and laboratory experience in research methodology related to nutrition. Critical review of articles, completion of laboratory projects, and preparation of a research proposal. (Lec. 2, Lab. 2) Pre: 444 and STA 308 or permission of instructor.

#### 506 Nutrition in the Community (3)

Exploration of the role of the nutrition professional in community needs assessment, intervention development and evaluation, and in forming domestic nutrition policy. (Lec. 3) Pre: graduate standing or permission of instructor.

#### 507 Applied Nutrition I (1)

Selected topics in applied nutrition with an emphasis on medical nutrition therapy. (Lec. 1) Pre: 444 or permission of instructor.

#### 508 Applied Nutrition II (1)

Selected topics in applied nutrition with an emphasis on community nutrition and food service management. (Lec. 1) Pre: 506 or permission of instructor.

#### 511 Seminar in Nutrition and Food Science I (1)

Reports and discussions of current topics in food science and nutrition, as well as oral reports of theses and dissertation research topics in progress. (Seminar) Pre: graduate standing or permission of chairperson.

#### 512 Seminar in Nutrition and Food Science II (1)

Critical review of oral presentations given in 511. Provides student with experience in communicative skills necessary to evaluate and critique scientific presentations. Attendance is required of all graduate students in residence when not enrolled in 511. (Seminar) Pre: graduate standing. S/U credit.

#### 551 Macronutrients in Human Nutrition (3)

Digestion, absorption, and metabolic role of macronutrients and their interrelationships. Influence of environmental and physiological factors on nutrient use and energy balance. Critical review of the literature. (Lec. 3) Pre: 441, BIO 242, and BCH 311, or permission of instructor.

#### 552 Micronutrients in Human Nutrition (3)

Absorption, metabolism, and role of micronutrients and their interrelationships. Critical review of the literature and implications for public policy. (Lec. 3) Pre: 441, BIO 242, and BCH 311, or permission of instructor.

#### 580 Experiential Learning in Nutrition and Food Sciences (1-6)

Supervised learning in a nutrition-related setting. (Practicum 1-6) Pre: acceptance into the M.S. nutrition program.

#### 581 Internship in General Medical Nutrition Therapy (1-3)

Supervised practice in medical nutrition therapy in a hospital setting. (Practicum) Pre: acceptance into the dietetic internship option.

#### 582 Internship in Advanced Medical Nutrition Therapy (1-3)

Supervised advanced practice in medical nutrition therapy in a hospital setting. (Practicum) Pre: acceptance into the dietetic internship option.

#### 583 Internship in Food Service Management (1-3)

Supervised practice in food service management in a hospital setting. (Practicum) Pre: acceptance into the dietetic internship option.

#### 584 Internship in Community Nutrition (1-3)

Supervised practice in community nutrition in a variety of community settings. (Practicum) Pre: acceptance into the dietetic internship option.

#### 585 Internship in Specialty Dietetic Practice (1-3)

Supervised practice in specialty areas of dietetic practice in a variety of settings. (Practicum) Pre: acceptance into the dietetic internship option.

#### 591, 592 Research Problems (1-4 each)

Advanced work under supervision of a staff member. Arranged to suit individual requirements of students. (Independent Study) Pre: permission of chairperson.

#### 599 Master's Thesis Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

#### 691, 692 Research in Nutrition and Food Sciences (1-3 each)

Assigned research on an advanced level. Students are required to outline the problem, conduct the necessary literature survey and experimental work, and present their observations and conclusions in a report. (Independent Study)

#### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Ocean Engineering (OCE)

Chairperson: Professor Grilli

#### 101 Introduction to Ocean Engineering (1)

Overview of ocean engineering topics pointing out the common areas with other engineering branches but emphasizing specific ocean applications. (Seminar) S/U only.

#### 205 Ocean Engineering Design Tools (3)

An introduction to design and analysis tools for ocean engineering including computer-aided design (CAD) in two- and three-dimensions, circuit layout and analysis, hydrodynamic modeling, mathematical computation, visualization, and algorithm development. (Lec. 3) Pre: EGR 106 and concurrent enrollment in OCE 215.

#### 206 Ocean Instrumentation (3)

Introductory course in ocean instrumentation covering theory, design, and implementation of basic circuits through electronic subsystems used in robotic ocean instruments and autonomous underwater vehicles (AUVs). (Lec. 3) Pre: 205 and concurrent enrollment in 216.

**215 Ocean Engineering Design I (1)**

Introduction to the design of systems in ocean engineering featuring team-based, hands-on projects. Integrated approach includes socioeconomic, environmental, operational, and professional development aspects. (Lec. 1, Lab. 1) Pre: concurrent enrollment in 205.

**216 Ocean Engineering Design II (1)**

Continuation of 215 with increased project complexity and team independence. (Lec. 1, Lab. 1) Pre: 215 and concurrent enrollment in 206.

**301 Fundamentals of Ocean Mechanics (4)**

Mathematical methods for the analysis of ocean phenomena; Fourier analysis; partial differential equations for modeling water wave and underwater acoustics; vector calculus in wave mechanics; fundamental probability theory and applied statistics. (Lec. 3) Pre: MTH 243 and OCE 205 and EGR 106.

**307 Introduction to Engineering Wave Mechanics and Littoral Processes (3)**

Description of coastal areas, study of beach dynamics and coastal protection methods. Linearized gravity wave theory (celerity, velocity, pressure, wave groups, and wave energy). Wave transformations (reflection, refraction, diffraction, shoaling, and breaking). Waves and water-level prediction, design wave. Wave probability distributions and applied statistics. Nearshore ocean waves and currents. Littoral and sediment transport. (Lec. 3) Pre: MCE 354 and OCE 301 or permission of instructor.

**310 Basic Ocean Measurement (3)**

Basic ocean measurement and instrumentation exercises using boats and laboratories. Includes cruise design, navigation and mapping systems, sonar systems, water quality sensors, wave spectra, computer data acquisition, and signal processing. (Lec. 1, Lab. 2) Pre: 206 or permission of instructor.

**311 Coastal Measurements and Applications (4)**

Exercises in basic coastal measurement from vessels, in situ, and in the laboratory. Experiments in measuring currents, surface elevation, wave and wave forces, geotechnical properties and applications, and acoustic propagation. (Lec. 2, Lab. 4) Pre: 310.

**360 Robotic Ocean Instrumentation Design (3)**

Design of robotic ocean instrumentation systems featuring team-based, hands-on projects. Includes power, sensor, communication, propulsion, and control system design for remotely operated and autonomous ocean instruments and underwater vehicles. (Lec. 2, Lab. 3) Pre: 216 or permission of instructor.

**416 Ocean Engineering Professional Practice (2)**

Introduction to professional practice in ocean engineering, including contemporary issues in the field, career planning and placement, lifelong learning strategies, professional licensure process, publication and presentation, and project management. (Lec. 2)

**421 Marine Structure Design (3)**

Review of wave mechanics; design breaker; probability and random variables; probabilistic wave elevation height models; short-term and long-term wave statistics; probability distribution models for extreme events; selection of design waves and water levels; wave run-up and overtopping; design of rubble mound structures; design of vertical breakwaters/seawalls; wave forces on vertical piles. (Lec. 3) Pre: 307.

**422 (or CVE 422) Offshore Structure and Foundation Design (3)**

Introduction to offshore structures and foundations, dynamic analysis, structural design for storms, design against fatigue failure, geotechnical site investigations, offshore foundation analysis and design. (Lec. 3) Pre: 421 and CVE 381 or permission of instructor. Not for graduate credit.

**425 Coastal Experiments (4)**

Basic coastal measurement techniques for coastal management. Experimental (field and laboratory) measurements of physical and geological parameters. Major student-designed, -operated, and -reported experiment addressing a practical problem. (Lec. 2, Lab. 4) Not for credit in ocean engineering. Pre: MTH 107 or 108 or equivalent.

**471 Underwater Acoustics (3)**

Vibrations, the acoustic wave equation, duct acoustics, and sound pressure levels and spectra. Underwater acoustics including transducers, arrays, surface and bottom scattering, and ray propagation. (Lec. 3) Pre: 301. Not for graduate credit.

**472 Sonar Systems Design (3)**

Fundamentals of design of sonar systems. Effects of sound propagation in deep and shallow oceans, noise, scattering on system performance. Array, transducer, and signal design. Passive and active sonar applications. (Lec. 3) Pre: 471.

**483 Foundation Engineering**

See Civil and Environmental Engineering 483.

**491, 492 Special Problems I, II (1–6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. Not for graduate credit.

**495 Ocean Systems Design Project I (3)**

Capstone design of an ocean system under the direction of a faculty advisor. Project must include engineering, economic, environmental, safety, and societal considerations. This is first of a two-course ocean engineering design sequence. Pre: senior standing and OCE 307 and 471. Not for graduate credit.

**496 Ocean Systems Design Project II (3)**

Capstone design of an ocean system under the direction of a faculty advisor. Project must include engineering, economic, environmental, safety, and

societal considerations. This is second of a two-course ocean engineering design sequence. Pre: 495. Not for graduate credit.

**506 Numerical Models and Data Analysis in Ocean Sciences**

See Oceanography 506.

**510 Engineering Ocean Mechanics (3)**

Fundamental equations of estuarine and coastal hydrodynamics. Scaling of governing equations. Long period waves including seiches, tides, storm surges, and tsunamis. Wind- and estuarine-induced circulation. Pollutant and sediment transport. (Lec. 3) Pre: MCE 354 or equivalent.

**514 Engineering Wave Mechanics and Nearshore Processes (3)**

Linear water wave boundary value problem. Engineering wave properties. Nonlinear waves (long waves, Stokes waves, stream function waves). Nearshore hydrodynamics and wave breaking. Fully nonlinear transient waves. (Lec. 3) Pre: MCE 455 or equivalent.

**515 Marine and Vehicle Hydrodynamics (3)**

Hydrodynamics of fixed and floating ocean structures (vehicles). Viscous, inviscid, and ideal fluid flows; and linear water waves involving bodies in unbounded fluid, floating bodies (in still water and in waves); ship waves; lifting surfaces. (Lec. 3) Pre: MCE 354 or equivalent or OCE 510 or 514; 307, 514 or equivalent.

**522 Dynamics of Waves and Structures (3)**

Deterministic analysis for SADOF structures; MDOF dynamic analysis; distributed-parameter systems; linear and second-order Stokes wave theories; wave forces on cylinders; chaotic vibration of marine structures. (Lec. 3) Pre: MCE 464 or permission of instructor.

**534 Corrosion and Corrosion Control**

See Chemical Engineering 534.

**535 Advanced Course in Corrosion**

See Chemical Engineering 535.

**550 (or ELE 550) Ocean Systems Engineering (3)**

Introduction to the design of systems for use in the ocean environment with emphasis on interaction of various subsystem disciplines to achieve total system performance characteristics. Introduction to detection, localization, classification, and time measurement strategies including global positioning system, underwater acoustics positioning and control, wireless acoustic and electromagnetic communication, and remote time transfer. Examples will include mobile, fixed, autonomous, distributed, and networked sensors. Pre: MTH 451 or equivalent.

**560 Introduction to Data Collection Systems (3)**

Practical problems of data collection. Probes and sensors, interfaces, signal conditioning, and storage. Examples found among the current research

areas within ocean engineering will be emphasized. (Lec. 3) Pre: graduate standing in engineering or permission of instructor. In alternate years. Next offered fall 2007.

### **561 Introduction to the Analysis of Oceanographic Data (3)**

Design of oceanic experiments to determine spatial and temporal sampling rate, precision, accuracy, signal-to-noise ratio, etc. Description of typical ocean data collection and analysis systems. Development of relevant techniques. (Lec. 3) Pre: IME 411, MTH 451, or equivalent.

### **565 Ocean Laboratory I (3)**

Measurements, experiments, operation of apparatus in the ocean and in the laboratory. Statistical theory, planning multivariable experiments, checking of data, etc. (Lec. 1, Lab. 6) Pre: graduate standing in engineering or oceanography, or permission of instructor.

### **571 (or ELE 571) Underwater Acoustics I (3)**

Introduction to sound generation, transmission, and reception, including vibration of mechanical systems, acoustic waves in fluids, acoustic transducers and arrays, acoustic propagation in the ocean, and sonar systems. (Lec. 3)

### **572 Underwater Acoustic Transducers (3)**

Theory, design, and calibration of electroacoustical transducers, including dynamical analogies and equivalent circuits, piezoelectric and magnetostriuctive materials, transmitting and receiving responses, reciprocity and acoustic measurements. (Lec. 3) Pre: 471 or equivalent.

### **575 Marine Bioacoustics (3)**

Introduction to marine mammal hearing, sound production, and the uses of sound for communication and echolocation; dolphin sonars; analysis and processing of marine mammal signals including passive tracking; the effects of noise on marine mammals. (Lec. 3) Pre: 471 or permission of instructor.

### **581 Experimental Geomechanics**

See Civil and Environmental Engineering 581.

### **582 (or CVE 582) Seabed Geotechnics (3)**

Geotechnical engineering principles as applied to submarine slope stability, bearing capacity, anchoring; emphasis on effective stress principle, compressibility, and shear strength of marine sediments. (Lec. 3) Pre: CVE 381 or equivalent or OCE 311, or permission of instructor.

### **583 Advanced Foundation Engineering**

See Civil and Environmental Engineering 583.

### **591, 592 Special Problems (1-6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.

### **599 Master's Thesis Research (1-9)**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### **605, 606 Ocean Engineering Seminar (1 each)**

Seminar discussions including presentation of papers based on research or literature survey. (Seminar) Required of all resident graduate students. May be repeated for a maximum of 2 nonprogram credits. S/U credit.

### **661 Analysis of Oceanographic Data Systems (3)**

Design of systems for deep-ocean and estuarine data collection and processing. Space-time sampling, multivariate analysis, and convergence of moments as applied to ocean data estimation and system design. Current topics in ocean data systems. (Lec. 3) Pre: 560 or ELE 506 or equivalent.

### **672 (or ELE 672) Underwater Acoustics II (3)**

Sound transmission in ocean, transducers, active signal design for range and Doppler resolution, ambient and platform noise, classical and wave vector-frequency methods of beamforming, adaptive beamforming, characteristics of targets, and active/pассиве sonar systems. (Lec. 3) Pre: 571.

### **673 Advanced Course in Underwater Acoustic Propagation (3)**

Analysis of propagation from a concentrated acoustic source in the ocean by methods such as advanced normal mode theory, numerical integration, and Fast Fourier Transforms. Applications to ocean features such as surface ducts, shadow zones, deep-sound channel, etc. (Lec. 3) Pre: 571 or equivalent.

### **676 Acoustic Radiation from Underwater Vibrators (3)**

Fundamentals of acoustic radiation from submerged structures. Radiation from planar, cylindrical, and spherical surfaces. In-vacuo and in-fluid vibration of elastic bodies. Acoustic coincidence and fluid-load-ing effects on radiation from elastic bodies. (Lec. 3) Pre: 571 or permission of instructor.

### **677 Statistical Sonar Signal Processing**

See Electrical Engineering 677.

### **688 (or CVE 688) Marine Geomechanics (3)**

Integrated study of marine geotechnics and marine geology. Topics include sedimentary processes, acoustic characteristics, slope stability, consolidation and stress history, engineering properties, and other subjects related to seabed utilization. (Lec. 3) Pre: CVE 381 or permission of instructor.

### **691, 692 Special Problems (1-6 each)**

Advanced work under supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.

### **699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## **Oceanography (OCG)**

*Dean:* Professor Farmer

### **110 (or GEO 110) The Ocean Planet (3)**

Introduces the origin and structure of the solar system; interaction of earth's solid interior, oceans' atmosphere and biosphere with emphasis on earth science; energy resources and present environment on earth. (Lec. 3) (N)

### **123 Oceans, Atmospheres, and Global Change (4)**

The impact of human activities on the oceans, atmospheric composition, and climate set against a background of natural processes in and history of global changes in climate and ecosystems. (Lec. 3, Lab. 3) (N)

### **131 Volcanoes and the Environment (3)**

General introduction to volcanic eruptions and their impact on the global environment and on human activity. Basic principles of the generation of magmas and their eruption at the earth's surface. (Lec. 3) (N)

### **401 General Oceanography (3)**

General survey in the major disciplines including geological, physical, chemical, and biological ocean sciences integrated into a conceptual approach to the coastal ocean. (Lec. 3) Pre: at least one laboratory course in a physical or biological science and junior standing or above. Not for graduate credit.

### **420 Deep-Sea Biology (3)**

Overview of the biology and ecology of the deep sea, including organisms and habitats, spatial and temporal patterns, physiology and adaptations, energetics, evolution, and hydrothermal vent ecology. (Lec. 3) Pre: one semester general biology (BIO 100, 101, 102, 103, 104, 130, 141) and one semester general chemistry (CHM 101, 103) required. One semester ecology or oceanography recommended (OCG 123, 401, 451, BIO 455).

### **451 Oceanographic Science (3)**

Oceanography for undergraduate science majors. The approach used is to present and apply basic physical, chemical, geological, and biological principles to the integrated study of the world ocean system. (Lec. 3) Pre: two semesters of MTH 131 and 132 or 141 and 142, one semester of CHM 101 and 102 or 191, one semester of PHY 111 and 185 or 203 and 273 or 213 and 285. A second semester of CHM 112 and 114 or 192 is recommended. Not for graduate credit in oceanography.

### **480 Introduction to Marine Pollution (3)**

An introductory course in marine pollution emphasizing geochemical aspects of the sources, transport,

and fate of pollutants in the coastal marine environment. (Lec. 3) Pre: one semester of general chemistry (CHM 101 or 103). One semester of general geosciences (GEO 100 or 103) is recommended. Not for graduate credit.

#### 483, 484 Laboratory and Research Problems in Physics

See Physics 483, 484.

#### 491 Ocean Studies (15)

Full-time intensive work experience with Graduate School of Oceanography research at Narragansett Bay Campus. Student expected to participate in research program, seminars, and other activities of Bay Campus. (Independent Study) Pre: junior standing in natural sciences, natural resources, or engineering, and permission of supervising faculty member. Not for graduate credit in oceanography. S/U only.

#### 493, 494 Special Problems and Independent Study in Oceanography (1-6 each)

Research in oceanography conducted as supervised individual study. (Independent Study) Pre: junior or senior standing in natural science, natural resources, or engineering, and permission of instructor. S/U only.

#### 501 Physical Oceanography (3)

Basic course covering physical properties of seawater, heat budget, distribution of variables, dynamics, water masses and general circulation, waves and tides. (Lec. 3) Pre: PHY 213 and MTH 141.

#### 505 Marine Analytical Chemistry (3)

Application of analytical methods to marine problems with emphasis on understanding basic methods and instruments. Combines general principles with practical experience. Students conduct analytical projects in the laboratory. (Lec. 1, Lab. 2).

#### 506 (or OCE 506) Numerical Models and Data Analysis in Ocean Sciences (3)

An introduction to numerical methods in all disciplines of oceanography and ocean engineering. Topics include model formulation, analysis, and simulation; data analysis and parameter estimation. Problem solving with Matlab and C in the weekly computer laboratory. (Lec. 2, Lab. 3)

#### 507 Oceanography for Educators (3)

Survey of ocean science concepts. Investigation of marine issues that affect the environment. Ten hours in the field. Integration of national science education standards and inquiry-based pedagogy. (Lec. 3) Pre: CHM 100 and BIO 113 (or equivalent). A semester of general geology (GEO 100 or 103) and at least one college level math course are recommended.

#### 508 Global Environmental Change Education (3)

Survey of global environmental change issues focusing on environmental systems, related ocean science topics, and local marine and coastal environments. Integration of national science education standards

and inquiry-based pedagogy. (Lec. 3) Pre: CHM 100 and BIO 113 (or equivalent). A semester of general geology (GEO 100 or 103) is recommended.

#### 510 Descriptive Physical Oceanography (3)

Observed distributions of temperature, salinity, currents; methods of deducing deep flow; physical properties of seawater; flow in estuaries; practical work in the analysis of oceanographic data; study of recent literature. (Lec. 3) Pre: 501.

#### 517 Foundations of Earth System Dynamics (3)

Introduction to the fundamental principals underlying fluid dynamics as applied to the study of specific problems and processes in earth, marine, and environmental sciences. Basics of numerical modeling are covered. (Lec. 3) Pre: MTH 141 and 142, or equivalent.

#### 521 Chemical Oceanography (3)

Processes regulating the composition of seawater and the distribution of chemical species. The interaction of marine chemistry with the ocean floor, atmosphere, and marine organisms. (Lec. 2, Lab. 2) Pre: CHM 101 and 112 and PHY 213.

#### 523 Organic Geochemistry of Natural Waters (3)

Chemistry of organic matter in natural waters with emphasis on the marine environment. Topics include a consideration of the origin, nature, and biogeochemical reactions of organic matter in aquatic environments. (Lec. 3) Pre: CHM 228 or permission of instructor.

#### 524 Atmospheric Pollution and the Upper Ocean (3)

Gas and aerosol chemistry and physics; land-air-sea transfer of N, S, C, halogen, and metal compounds; effects of air pollution on the marine atmosphere and upper ocean. (Lec. 3) Pre: BCH 435 or CHE 313 or CHM 431 or MCE 341 or PHY 420 or permission of instructor.

#### 531 Synoptic and Dynamic Meteorology (3)

Observed structure of atmosphere; principles of balanced flows, waves, and disturbances. Observations and models of storm formation, semipermanent features, and general circulation. Relationship between weather and climate. (Lec. 3) Pre: PHY 203 or permission of instructor.

#### 533 Graduate Writing in Marine and Environmental Sciences (3)

Graduate writing in marine and environmental sciences; writing and editing journal articles and abstracts; principles and practice in scientific writing. Pre: graduate standing and WRT 104, 105, or 106, or permission of instructor.

#### 535 Climate, Radiation, Gases, and Aerosols (3)

Role of short- and long-wave radiation in climate. Occurrence and consequences of natural and enhanced concentrations of radiatively-active gases. Role of aerosols and associated forcings and feed-

backs. (Lec. 3) Pre: PHY 205 or 214, CHM 192 or permission of instructor.

#### 540 Geological Oceanography (3)

Origin and evolution of the ocean basin and its margin: morphology, structure, plate tectonics, volcanism, geochemistry, stratigraphy, sedimentation, and paleoceanography. (Lec. 2, Lab. 2) Pre: GEO 103 or permission of instructor.

#### 545 Volcaniclastic Sedimentation (3)

Generation of volcanic particles by explosive volcanism, the processes by which they are dispersed on land and in the sea, and physical characteristics of their deposits in different volcanic environments. (Lec. 3) Pre: 540 or permission of instructor.

#### 552 Marine Geophysics (3)

Survey of basic subdisciplines of marine geophysics including plate tectonics, gravity, magnetics, heat flow, reflection and refraction seismology. Basic theory and methods of data collection and interpretation emphasized. (Lec. 3) Pre: 540 or permission of instructor.

#### 561 Biological Oceanography (4)

Dynamics of marine ecosystems; patterns of production and distribution of plankton, benthos, and nekton in relationship to their environment. (Lec. 3, Lab. 2) Pre: general ecology.

#### 574 Biology of Marine Mammals (3)

Migration, reproduction, social organization, classification, anatomy, populations, physiology, and communications of cetaceans and pinnipeds. (Lec. 2, Lab. 2) Pre: permission of instructor.

#### 576 (or MIC 576) Marine Microbial Ecology (4)

Examines role of microbes in the oceans and their impact on oceanographic processes and biogeochemical cycles. Emphasis is on bacteria and their interactions with other marine organisms and the marine environment. Laboratory exercises make use of modern techniques to study metabolic rates and community structure. (Lec. 3, Lab. 3) Pre: permission of instructor.

#### 580 Introduction to Marine Pollution (3)

An introductory course in marine pollution emphasizing geochemical aspects of the sources, transport and fate of pollutants in the coastal marine environment. Review papers or research proposals will be required. (Lec. 3) Pre: one semester of general chemistry (CHM 101 or 103). One semester of general geosciences (GEO 100 or 103) is recommended.

#### 591, 592 Individual Study (1-6)

Individual study of assigned topics or special problems involving literature search and/or original investigation under one or more members of the faculty. (Independent Study)

#### 593, 594 Special Studies (1-4 each)

Studies of specialized topics in the marine sciences. (Independent Study)

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor. (Independent Study) S/U credit.

**605 Dynamical Oceanography (3)**

Simple steady-state theories applied to ocean motion. Review of well-known force balances in oceanography, wind-driven circulation, thermohaline circulation, the thermocline, oceanic boundary layers, nearshore circulation, diffusion. (Lec. 3) Pre: 501.

**610 Geophysical Fluid Dynamics I (3)**

Natural world fluid dynamics emphasizing ocean circulation. Classical fluid dynamics; GFD fundamentals (rotation and stratification); Taylor-Proudman theorem; potential vorticity; planetary waves; geostrophic contours; shallow water quasi-geostrophic theory; frictional layers. (Lec. 3) Pre: 605 or permission of instructor.

**611 Geophysical Fluid Dynamics II (3)**

Continuously stratified quasi-geostrophic theory; classical and modern theories of the wind-driven ocean circulation; stability theory; oceanic convection; wave-mean flow interactions; ageostrophic dynamics; topographical effects. (Lec. 3) Pre: 610 or permission of instructor.

**613 Waves (3)**

Generation, propagation, and decay of surface waves, internal waves, and Rossby waves in the ocean. (Lec. 3) Pre: MCE 550 or permission of instructor.

**614 Tides (2)**

Generation, propagation, and dissipation of ocean tides. Earth tides. Relation between theory and observation. Tidal analysis. (Lec. 2) Pre: 501.

**620 Chemical Distributions (3)**

Interdisciplinary study of the processes responsible for oceanic chemical distributions with emphasis on conservative properties, biologically active constituents, and radionuclides. Includes projects involving data-processing analysis. (Lec. 3) Pre: 501, 521, 540, and 561 or permission of instructor.

**623 Physical Chemistry of Seawater (3)**

Characterization of dissociation, solubility, and redox equilibria in seawater. Partial molar volumes, conductivity, and diffusion of ions in seawater. Kinetic studies in seawater; effects of temperature, salinity, and pressure on physiochemical properties in seawater. (Lec. 3) Pre: 521 and CHM 432 or permission of instructor.

**625 Organic Geochemistry of Sediments (3)**

Chemistry of organic matter in recent to ancient sediments. Topics include the source, characterization, significance, and fate of sedimentary organic compounds with emphasis on the marine environment. (Lec. 3) Pre: 523 or permission of instructor.

**628 High-Temperature Geochemistry (3)**

Principles and factors governing the distribution of trace elements in volcanic processes. Applications to the study of rock genesis, mantle dynamics, oceanic crust formation, and hotspots. (Lec. 3) Pre: CHM 431 or equivalent, or permission of instructor.

**631 Seminar in Marine and Atmospheric Chemistry (1)**

Discussion of problems of current interest in marine chemistry. (Seminar) Pre: 521 or permission of instructor. S/U credit.

**640 Marine Particles (3)**

Discussion of the chemical, biological, and physical processes that control particle formation, transformation, and sedimentation in the oceans. Pre: permission of instructor.

**643 Subduction Zones (3)**

Structure, petrology, and geochemistry of subduction zones, island arcs, and other magmatic arcs at convergent plate margins. Petrogenesis of andesites and related magmas. (Lec. 3) Pre: 540 or permission of instructor.

**645 Petrology of the Oceanic Crust (3)**

Nature and origin of igneous and metamorphic rocks of the oceanic crust of the earth; mineralogy, petrology, and petrogenesis of seafloor rocks; metamorphism of the ocean crust. (Lec. 3) Pre: graduate standing or permission of instructor.

**649 Plankton Paleoecology (3)**

Concepts of paleoecology. Interaction between planktonic marine organisms and their environment over evolutionary time scales. The use of fossil plankton in reconstructing paleoenvironmental conditions and paleoecological systems. Patterns, causal hypotheses, and geological consequences of temporal and geographic variation in Cretaceous and Cenozoic plankton assemblages. (Lec. 2, Lab. 2) Pre: permission of instructor.

**651 Marine Stratigraphy (3)**

Concepts and methods of biostratigraphy, lithostratigraphy, and chronostratigraphy. Stratigraphic nomenclature. Stratigraphic correlation and completeness. Special focus will be placed on the integration of multiple stratigraphic techniques and their application to the Cretaceous and Cenozoic marine record. Class discussion of advances and problems in recent research articles. (Seminar) Pre: permission of instructor.

**655 Paleomagnetism and Geomagnetism (3)**

Earth's magnetic field, origin and dynamo theory, rock magnetism and paleomagnetism, field directions in rocks and sediments, and temporal variation. Magnetic recording by ridges and seamounts; forward/inverse modeling, skewness analysis. (Lec. 3) Pre: 540 or permission of instructor.

**661 (or BIO 661) Phytoplankton Taxonomy (3)**

Classical and modern systems and techniques for the identification, nomenclature, and classification of planktonic algae, with emphasis on marine forms. Phylogeny will be briefly considered. (Lec. 1, Lab. 4) Pre: permission of instructor.

**663 (or BIO 663) Phytoplankton Physiology (3)**

Metabolic processes and methods of their investigation in phytoplankton with primary emphasis on functions pertinent to their ecology. Includes adaptation, uptake of nutrients, excretion, rhythms, pigments, and photosynthesis. (Lec. 3) Pre: graduate standing or permission of instructor.

**664 (or BIO 664) Phytoplankton Ecology (3)**

Biology and ecology of the pelagic marine microscopic algae with emphasis on their adaptations, physiological ecology, distribution, succession, production, and regional and seasonal dynamics. (Lec. 3) Pre: permission of instructor.

**665 Marine Bio-Optics and Remote Sensing (3)**

Bio-optical properties of ocean waters. Major focus is on basic principles of visible-band ocean remote sensing and its application to determining phytoplankton pigment and production at regional to global scales. (Lec. 2, Lab. 2) Pre: 561. Offered in odd-numbered years.

**666 Zooplankton (3)**

Biology of marine zooplankton, dealing with morphology, adaptation, distribution, physiology, production, and interrelationships with other members of the marine biota. (Lec. 1, Lab. 4) Pre: permission of instructor.

**668 Productivity of Ocean Margins (3)**

Processes affecting biological productivity of ocean margin waters. Major focus on dynamics of production in mid to outer shelf waters and adjacent boundary currents. (Lec. 3) Pre: 501, 561.

**669 Marine Fish Ecology and Production (3)**

Functioning of fishes in major world ecosystems is explored through comparison of feeding ecology, bioenergetics, and production rates. (Lec. 3) Pre: 561 or permission of instructor.

**670 Fish Population Dynamics (3)**

Methods for estimating vital statistics of fish populations, stock assessment theory and methods, analytical and empirical model development, and fisheries forecasting. (Lec. 3) Pre: graduate standing or permission of instructor.

**671 Marine Zooplankton Ecology (3)**

Marine zooplankton community structure and function including the relation of spatial and temporal distribution patterns to the oceanic environment, organism interactions, secondary production, feeding, and reproduction. Emphasis on open-ocean communities. (Lec. 3) Pre: 561 or permission of instructor.

**673 Fisheries Oceanography (3)**

Physical and biological processes acting at the egg, larval, juvenile, and adult stages of commercially important fish and shellfish. Topics include: growth, survival, and recruitment dynamics; larval dispersal and fish distributions; changes in long-term abundance in relation to climate. (Lec. 3) Pre: graduate standing or permission of instructor. 501, 561 recommended.

**678 Low-Temperature Geochemistry and Isotope Geology (3)**

A study of processes important in determining the chemical and isotopic mass balance of the oceans and the geochemistry of deep-sea sediments. (Lec. 3) Pre: 521.

**679 (or BIO 679) Animal Communication (2)**

Visual, chemical, and auditory communication in animals, including receptor systems, feedback, and redundancy. Functional aspects and organization of communication. Discussion of readings. Research problem can be taken under 691 or BIO 691. (Lec. 2) Pre: BIO 467 or equivalent and permission of instructor.

**689 Coastal Marine Ecosystems (3)**

Basic principles of estuarine and coastal ecology. Offered spring semester only. Two 1-hour lecture-discussion sessions per week. (Lec. 3) Pre: undergraduate or graduate science major, basic ecology course.

**691, 692 Individual Study (1–6 each)**

Individual study of assigned topics or special problems involving literature search and/or original investigation under one or more members of the faculty. (Independent Study)

**693, 694 Special Studies (1–4 each)**

Studies of specialized topics in the marine sciences. (Independent Study)

**695 Seminar in Oceanography (1 each)**

Students give seminar reports on problems and current research in various areas of oceanography. (Seminar) Attendance and registration are required of all graduate students in residence, but no more than 2 credits are allowed for a program of study. S/U credit.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or doctoral committee. (Independent Study) S/U credit.

**930 Workshop in Oceanography Topics for Teachers (0–3)**

Especially designed for teachers of physical sciences. Basic topics in oceanography from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

*Note: Graduate students in oceanography may choose from supporting courses in other departments in consultation with their major advisor.*

**Pharmacy (PHC)**

*Dean:* Professor Letendre

**305 Introduction to Information Technology in Pharmacy (3)**

Introduction to and use of drug information databases in pharmacy and pharmaceutical sciences. (Lec. 3)

**317 Interactive Learning Session I (1)**

Small group active learning sessions designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: third-year standing or permission of instructor.

**327 Interactive Learning Session II (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: third-year standing permission of instructor.

**417 Interactive Learning Session III (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: fourth-year standing or permission of instructor.

**427 Interactive Learning Session IV (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: fourth-year standing or permission of instructor.

**502 Drug Development (3)**

Scientific and regulatory aspects of drug development from discovery to market, exemplified by URI research. (Lec. 3) Pre: graduate standing in pharmacy.

**517 Interactive Learning Session V (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: fifth-year standing or permission of instructor.

**527 Interactive Learning Session VI (1)**

Small group active learning designed to reinforce progressively the basic science curriculum, promote communication and problem-solving skills, and enhance patient assessment and the delivery of pharmaceutical care. (Seminar) Pre: fifth-year standing or permission of instructor.

**594 Advanced Experiential Tracking Experience (5)**

Students will select one area to provide hands-on experience in acquiring, interpreting, and applying information to a specific practice field. This will be accomplished by collaborative work with a sponsor. Students should select one related topic area that will complete their tracking requirements. (Practicum) Pre: sixth-year standing in the Doctor of Pharmacy Program and completion of all required courses in the first 5 years of the program.

**Pharmacy Practice (PHP)**

*Chairperson:* Professor Owens

**311 Foundations of Human Disease I: Immunoinflammatory Disease**

See Biomedical and Pharmaceutical Sciences 311.

**312 Foundations of Human Disease II: Central Nervous System Disease**

See Biomedical and Pharmaceutical Sciences 312.

**316 Pharmacy Law and Ethics (3)**

Basic principles of law and ethics as applied to federal, state, and local acts, regulation, and practices encountered in professional practice. Specific attention to liabilities of pharmacists in decisions; actions involving sale of medicinals, poisons, narcotics. (Lec. 2, Rec. 1) Pre: third-year standing or permission of instructor.

**324 Pharmacotherapy of CNS and Musculoskeletal Disorders—Therapeutics I (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of data to design, monitor, and modify drug therapy in psychiatric, neurologic, and musculoskeletal diseases. (Lec. 2) Pre: third-year standing or permission of instructor.

**350, 351 Introductory Practice Experience I and II (0)**

Structured practical experience in institutional and community pharmacy settings. (Practicum) Pre: third-year standing.

**360 Hospital Pharmacy (3)**

Introduction to practice of pharmacy in hospitals, including both professional and administrative activities. Field trips to representative hospital pharmacies. (Lec. 3) Pre: third-year standing.

**409 Foundations of Human Disease III: Infectious and Pulmonary Processes**

See Biomedical and Pharmaceutical Sciences 409.

**410 Foundations of Human Disease IV: Endocrinology, Oncology, Medicinal Genetics, GI**

See Biomedical and Pharmaceutical Sciences 410.

**411 Biostatistics II**

See Statistics 411.

**413 Pharmacotherapy of Infectious Diseases—Therapeutics II (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of clinical data to design, monitor, and modify drug therapy in infectious and pulmonary diseases. (Lec. 2) Pre: fourth-year standing or permission of instructor.

**414 Pharmacotherapy of Endocrine and GI Disorders—Therapeutics III (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of clinical data to design, monitor, and modify drug therapy in endocrine and gastrointestinal disease. (Lec. 2) Pre: fourth-year standing or permission of instructor.

**420 Biotechnology Products in Pharmacy**

See Biomedical and Pharmaceutical Sciences 420.

**430 Advanced Infectious Diseases and Pulmonary Pharmacotherapy (3)**

Advanced topics in infectious diseases and pulmonary pharmacotherapy through literature review, data interpretation, and case scenarios. Content will be delivered through the perspective of clinical pharmacists. (Lec. 3) Pre: 413. Not for graduate credit.

**440 Advanced Pediatric Pharmacotherapy (3)**

Pharmacotherapeutic needs of infants, children, and adolescents with a focus on pharmacokinetic, pharmacodynamic, and other developmental-associated physiological changes. (Lec. 3) Pre: fourth-year standing (second professional year) in the Doctor of Pharmacy program.

**450, 451 Introductory Practice Experience III and IV (0)**

Structured practical experience in institutional and community pharmacy settings. (Practicum) Pre: fourth-year standing. Not for graduate credit.

**460 Palliative Care (3)**

Principles of palliative care including control of pain and other symptoms, and psychological, social, and spiritual issues. (Lec. 3) Pre: fourth- or fifth-year standing in Pharm.D. program or permission of instructor. Not for graduate credit.

**497, 498 Special Problems (1-3 each)**

Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) Pre: permission of chairperson.

**503 Health Systems I (2)**

Introduction to the principles of financial analysis, personal management, pharmaceutical marketing, organizational behavior, inventory control, and health policy. Principles as they relate to health care delivery with an emphasis on planning systems. (Lec. 2) Pre: fifth-year standing or permission of instructor.

**504 Health Systems II (3)**

Analysis and interpretation of the health care delivery system from the perspectives of organizational struc-

ture and program analysis. Emphasis on pharmacoeconomic aspects of quality of life issues, outcome measurements, reimbursement systems, and drug utilization evaluation. (Lec. 3) Pre: fifth-year standing or permission of instructor

**510 Foundations of Human Disease V: Renal and Cardiovascular Diseases**

See Biomedical and Pharmaceutical Sciences 510.

**513 Pharmacotherapy of Oncology and Toxicology—Therapeutics IV (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of clinical data to design, monitor, and modify drug therapy in cancer, blood disorders, and overdose conditions. (Lec. 2) Pre: fifth-year standing or permission of instructor.

**514 Pharmacotherapy of Renal and Cardiovascular Disorders—Therapeutics V (2)**

The appropriate use of medications in the treatment of human disease. Interpretation of clinical data to design, monitor, and modify drug therapy in renal and cardiovascular disease. (Lec. 2) Pre: fifth-year standing or permission of instructor.

**515 Pharmacy Practice Laboratory I**

See Biomedical and Pharmaceutical Sciences 515.

**516 Pharmacy Practice Laboratory II**

See Biomedical and Pharmaceutical Sciences 516.

**518 Self-Care I**

See Biomedical and Pharmaceutical Sciences 518.

**519 (or BPS 519) Self-Care II (3)**

Expansion of nonprescription and complementary medicine therapeutics. Explore the implementation of pharmaceutical care programs in community pharmacy practice. (Lec. 3) Pre: 518 (or BPS 518); fifth-year standing.

**520 Advanced Gastrointestinal and Endocrine Pharmacotherapy (3)**

Provides students with an expanded knowledge base in the area of GI and endocrine pharmacotherapy, emphasizing active learning, literature evaluation, data interpretation. (Lec. 3) Pre: fifth-year standing in the Doctor of Pharmacy Program; enrollment in the pharmacotherapy track, or permission of instructor. Not for graduate credit.

**540 Principles, Methods, and Applications of Epidemiology (3)**

An introduction to epidemiology, the study of health and disease in populations. Epidemiologic methods and research design for conducting and interpreting health research. (Lec. 3) Pre: STA 307 or permission of instructor.

**542 Evaluation of Controversies in Drug Literature (3)**

Through critical review of literature, controversies in drug therapy and drug-associated illness will be evaluated to improve students' knowledge and ana-

lytical skills. (Lec. 3) Pre: fourth-year standing in the College of Pharmacy, or permission of instructor.

**550 Pharmacoepidemiology (3)**

The application of epidemiologic principles to the study of drug effects in human populations. (Lec. 3) Pre: 540 or permission of instructor.

**555 Advanced Neuropsychiatric Pharmacotherapy (3)**

Comprehensive and advanced course on the pharmacotherapy of psychiatric and neurological diseases. Use of clinical case studies, evaluation of the primary literature, and other forms of interactive teaching will be emphasized. (Lec) Pre: 324, 312 or BPS 312, BPS 322 or permission of the instructor.

**560 Advanced Cardiovascular and Renal Pharmacotherapy (3)**

Advanced assessment and pharmacotherapeutic management of patients with cardiovascular and renal disease through the application of evidence-based medicine and critical evaluation of literature. (Lec. 3) Pre: fifth-year standing in the Doctor of Pharmacy Program; enrollment in the pharmacotherapy track, or permission of instructor. Not for graduate credit.

**570 Case Studies in Pharmacy Law (3)**

Case studies and a detailed analysis of the FDC, Controlled Substances Act, and health insurance laws. (Lec. 3) Pre: 351.

**580 Pharmacoeconomic Analysis (3)**

Introduction to methodologic approaches utilized in economic evaluation of drug use and therapy in community and managed care settings, and clinical trials, including the FDA approval process and liability issues. (Lec. 3) Pre: STA 307 or equivalent, or permission of instructor. In alternate years.

**591 Advanced Outpatient Practice Experience (5)**

Students will develop and learn clinical skills to provide pharmaceutical care for patients in either the community or outpatient setting through direct patient contact, use of physical assessment findings, and the design and implementation of patient-specific pharmacotherapy. (Practicum) Pre: sixth-year standing in the Doctor of Pharmacy Program and completion of all required courses in the first 5 years of the program.

**592 Advanced Inpatient Practice Experience (5)**

Through collaboration with other health care professionals, daily rounding with the medical team, and application of evidence-based medicine, students will develop clinical skills to provide pharmaceutical care for patients in the inpatient setting. (Practicum) Pre: sixth-year standing in the Doctor of Pharmacy Program and completion of all required courses in the first 5 years of the program.

**593 Advanced Practice Experience Elective (5)**

Students will collect and interpret data to design, recommend, and modify patient-specific pharmacotherapy or pharmaceutical problems in specialized settings in collaboration with other health care professionals. (Practicum) Pre: sixth-year standing in the Doctor of Pharmacy Program and completion of all required courses in the first 5 years of the program.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**640 Epidemiologic Methods for the Health Sciences (2)**

A focus on quantitative methods used in epidemiologic and health-related research. Students will learn to analyze and interpret data from large-scale observational studies and will be exposed to problematic situations in research design and data analysis. (Lec. 3) Pre: 540, STA 412, or permission of instructor.

**680 The Legal Environment in Health Administration (3)**

Application of specialized statutory and regulatory provisions in federal and state law to the delivery of health care. (Lec. 3) Pre: graduate standing.

**693, 694 Seminar (1 each)**

Seminar discussions including presentation of papers on selected topics in pharmacy. (Seminar) Required of all graduate students, with a maximum of 1 credit allowed per year. May be repeated for a maximum of 2 credits for M.S. candidates. May be repeated for a maximum of 5 credits for Ph.D. candidates.

**697, 698 Research (1-3 each)**

Literature survey, laboratory work, and a detailed research report on one or more assigned topics in pharmacy. (Independent Study)

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**900 Physical Assessment (0)**

Provides students with an introduction to core patient assessment skills. Further develops students' patient interviewing and documentation skills. (Workshop) Pre: fifth-year standing in the Doctor of Pharmacy Program. S/U only.

**Philosophy (PHL)**

Chairperson: Professor Zeyl

**101 Critical Thinking (3)**

Identification, formulation, and evaluation of both inductive and deductive patterns of reasoning. Consideration of topics such as probability, reasoning about causes, fallacies, foundations of argument, and the issues in logical theory. (Lec. 3) (EC) or (L)

**103 Introduction to Philosophy (3)**

Pursues such basic questions as: What is a person? What is knowledge? Are we free? What is moral right and wrong? Does God exist? What is the meaning of death? (Lec. 3) Not open to students with 9 or more credits in philosophy. (L)

**204 Theories of Human Nature (3)**

An introduction to philosophical inquiry by critical examination of some major traditional and contemporary views of human nature as expressed in a variety of religious, literary, scientific, and philosophical writings. (Lec. 3) (L)

**205 Philosophical Topics (3)**

An intensive study of one or more problems, issues, or topics of classical or current interest in philosophy. Emphasis on the analysis and construction of arguments relevant to the topic(s). Small class format. (Lec. 3)

**210 Women and Moral Rights (3)**

An introduction to the philosophical problems raised by reproduction, affirmative action, pornography, gender roles, and sexism in language through a critical examination of these issues. (Lec. 3) (L) [D]

**212 Ethics (3)**

Evaluation of major ethical theories. Application of moral reasoning to topics such as virtues and vices, human dignity, conscience, responsibility, moral dilemmas, and reasons to be moral. (Lec. 3) (L) [D]

**215 Science and Inquiry (3)**

The objective is to survey both the influence of philosophy on science and the influence of science on philosophy, all from a Western historical perspective. (Lec. 3) (L)

**217 Social Philosophy (3)**

A systematic introduction to the philosophical problems of contemporary social relations: models of community, sources of alienation, property and ownership, the meaning of work and technology, human rights and freedom. (Lec. 3) (L) [D]

**235 Modern Thought: Philosophy and Literature**

See Comparative Literature Studies 235. (L)

**314 Ethical Problems in Society and Medicine (3)**

Ethical analysis of topics such as war, capital punishment, sexual morality, suicide, animal rights, honesty and deception, world hunger, discrimination, abortion. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor. (L)

**316 Engineering Ethics**

See Engineering 316. (L) [D]

**318 Power/Justice: Contemporary Critical Philosophies (3)**

Study of contemporary critical philosophies in the traditions of Marxism, existentialism, postmodernism, and feminism, with emphasis on philosophers such as Habermas and Foucault. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor.

or 103 or one 200-level PHL course or permission of instructor.

**321 Ancient Philosophy (3)**

Survey of major thinkers and schools of thought in Ancient Greece, including selected pre-Socratics, Plato, and Aristotle. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor. (L)

**322 Medieval Philosophy (3)**

Survey of major thinkers and schools of thought in the Middle Ages, including Augustine, Anselm, Aquinas, and Ockham. (Lec. 3) (L)

**323 Modern Philosophy: Descartes to Kant (3)**

Survey of 17th- and 18th-century European philosophy. Includes, but is not limited to, empiricism, rationalism, and Kant's critical philosophy. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor. (L) [D]

**324 Recent European Philosophy (3)**

19th- and 20-century British and European continental developments. Discussion of movements such as idealism, utilitarianism, existentialism, and phenomenology and of philosophers such as Hegel, Kierkegaard, Mill, Husserl, Sartre, and Heidegger. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor.

**325 American Philosophy (3)**

A study of American philosophy including such movements as puritanism, transcendentalism, pragmatism, naturalism, process-philosophy, realism, and philosophical analysis. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor. (L) [D]

**328 The Philosophy of Religion (3)**

A systematic and critical consideration of such topics as the existence and nature of God, the problem of evil, the relation of faith to reason, religious language, miracles, and immortality. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor. (L) [D]

**331 East Asian Thought (3)**

A study of the important philosophical and religious systems of China, Korea, and Japan; emphasis on Chinese traditions. (Lec. 3) (FC) or (L) [D]

**341 Introduction to Metaphysics (3)**

Analyzes topics such as person, mind-body, human action, freedom and determinism, causation, time, space, essence and existence, universals, and types of beings. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor.

**342 Knowledge, Belief, and Truth (3)**

Analysis of topics such as knowledge, belief, certainty, doubt, skepticism, faith, the ethics of belief, truth, error, perception, *a priori* knowledge, subjectivity and objectivity, and memory. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor.

**346 Existential Problems in Human Life (3)**

Discussion of ultimate questions of human existence such as meaning in life, personal commitment, human relations, suffering, despair, hope, freedom, authenticity, self-deception, death, God, and immortality. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor. (L)

**355 Philosophy of Art (3)**

Systematic problems arising from reflection on the creation and perception of works of art. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course or permission of instructor. (L)

**401, 402 Special Problems (3 each)**

Course may vary from year to year, allowing one or more advanced students to pursue problems of special interest with guidance of instructor in conferences. One or more written papers. (Independent Study) Pre: 3 credits in philosophy and permission of instructor. May be repeated for credit.

**430 Philosophy of Law (3)**

Critical evaluation of the basis of legal authority and legal decision making, covering topics in the areas of analytic and ethical jurisprudence as well as professional ethics for lawyers. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course, and one 300-level PHL course, or permission of instructor.

**451 Symbolic Logic (3)**

Selected topics in modern symbolic logic including calculus of propositions, predicate calculus, and modal logics. Philosophical and mathematical aspects of the subject. (Lec. 3) Pre: 101 or MTH 131 or higher or permission of instructor.

**452 Philosophy of Science (3)**

Analysis of the nature and structure of scientific thought. Consideration of issues such as structure and types of scientific explanation, verification and falsification, and unity of the sciences. (Seminar) Pre: 101, 215, or 451, one 300-level PHL course, and 6 credits of natural science; or permission of instructor.

**453 Philosophy of the Social Sciences (3)**

Examination of philosophical problems raised by contemporary social sciences: the meaning of scientific knowledge, the nature of understanding of other persons and cultures, the relation of theory and practice. (Seminar) Pre: 101 or 103 or 204 or permission of instructor.

**454 Philosophy of the Natural Environment (3)**

An exploration of our problematic relationship to the natural environment: nature's ontological status, the epistemological encounter with nature through science and art, and the ethical obligations emerging from these considerations. (Seminar) Pre: 101 or 103 or one 200-level and one 300-level course in philosophy, or permission of instructor.

**490 Senior Seminar in Philosophy (3)**

In-depth study of the major works of a significant Western philosopher or of a major philosophical topic. (Seminar) Pre: senior standing in philosophy or permission of instructor. May be repeated for credit.

**499 Senior Thesis (3)**

Independent research. Student works in close conjunction with a faculty member on a mutually agreeable topic. Written thesis required. (Independent Study) Pre: senior standing and permission of instructor. Not for graduate credit.

**502, 503 Tutorial in Philosophy (3 each)**

Discussion by the staff and advanced students of research problems in philosophy. Presentation and criticism of original papers. (Independent Study) Pre: graduate standing or permission of instructor. May be repeated for a maximum of 9 credits.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Physical Therapy (PHT)**

*Chairperson:* Professor Marcoux

**440 Advanced Head and Neck Anatomy**

See Dental Hygiene 440.

**500 Human Anatomy and Histology (4)**

Structure and function of human anatomy as related to physical therapy. Emphasis on musculoskeletal, visceral, nervous, and vascular systems and tissue histology. Functional changes after injury also will be emphasized. (Lec. 4) Pre: first-year standing or permission of chairperson.

**501 Applied Human Anatomy Laboratory (4)**

Dissection of a cadaver to demonstrate structure and function of human anatomy. Accurate palpation of anatomic structures in parallel with dissection. (Lab. 8) Pre: first-year standing, or permission of chairperson.

**508 Psychosocial Issues in Physical Therapy (2)**

Behavioral and psychosocial issues relevant in physical therapy practice. Patient's perception of care and interactions in the health care environment. (Lec. 2) Pre: first-year standing or permission of chairperson.

**510 Biomechanics and Pathokinesiology (5)**

Principles, theories, and recent investigations of the biomechanics of human motion and posture are presented to develop analytical skills for normal and abnormal movement evaluation. (Lec. 5) Pre: 500 and 501 and 520 and first-year standing, or permission of chairperson.

**511 Human Neuroscience and Neurology (5)**

Anatomy, physiology, dysfunction, and evaluation of the human nervous system as a basis of therapeutic intervention. Gross and microscopic structure of

the nervous system and the neurological examination (Lec. 4, Lab. 2) Pre: 500 and 501 and first-year standing, or permission of chairperson.

**512 Basic Physical Evaluation, Therapeutic Exercise and Care (5)**

Range of motion, posture, sensory, reflex, and manual muscle testing methods of physical examination. Soft tissue evaluation and introduction to functional mobility and therapeutic exercise prescription. Transfers and ambulation techniques. (Lec. 5) Pre: first year standing, or permission of chairperson.

**518 Communication Issues in Physical Therapy (1)**

Communication and professional issues that influence the practice of physical therapy. Verbal/non-verbal communication, professional dress and behavior, cultural competence, adult education principles, and professional association issues. (Lec. 1) Pre: first-year standing, or permission of chairperson.

**520 Physiological and Pathophysiological Basis of Physical Therapy (5)**

Physiological systems, pathophysiological mechanisms, methods of diagnosis, and rationale for safe and effective physical therapy interventions. (Lec. 5) Pre: first-year standing, or permission of chairperson.

**528 Ethical, Legal, and Professional Issues in Clinical Practice (3)**

Practice standards, interdisciplinary issues, ethical considerations, and legal implications of physical therapy practice. Professional development, expert practice, doctoring professions, informed consent, patient rights, standards of practice, advanced directives, malpractice, domestic violence, child and elder abuse. (Lec. 3) Pre: second-year standing, or permission of chairperson.

**532 Clinical Electrophysiology and Physical Agents (5)**

Theory, practice, and current research regarding application of clinical electrophysiology and physical agents. Diagnostic methods, interventions, and personnel supervision for mechano-, electro-, thermo-, hydro-, ionto-, and photo-therapy administration are covered. (Lec. 5) Pre: first-year standing, or permission of chairperson.

**538 Management and Administration in Physical Therapy (4)**

Practical managerial and supervisory techniques and theory in physical therapy settings. Third party reimbursement, state regulations, health policy formulation, roles of government and politics in health care. (Lec. 4) Pre: third-year standing, or permission of chairperson.

**542 Primary Care and Clinical Diagnosis (2)**

Clinical decision making underlying medical and therapeutic diagnostic methods to develop competencies in referral and evaluation of disorders. Diagnostic reasoning, medical and PT testing, documentation of billing, interdisciplinary chart review.

(Lec. 2) Pre: second-year standing, or permission of chairperson.

#### 544 Physical Therapy in Women's Health (2)

Physical therapy issues and problems in special topics of women's health. (Lec. 2) Pre: third-year standing, or permission of chairperson.

#### 550 Musculoskeletal Therapeutics I: The Extremities (5)

Physical therapy management of individuals with, and the prevention of, impaired joint mobility, motor function, muscle performance, range of motion, and reflex integrity associated with musculoskeletal dysfunction in the extremities. (Lec. 5) Pre: 510 and second-year standing, or permission of chairperson.

#### 552 Musculoskeletal Therapeutics II: The Spine (5)

Physical therapy management of individuals with, and the prevention of, impaired joint mobility, motor function, muscle performance, range of motion, and reflex integrity associated with musculoskeletal dysfunction in the spine. (Lec. 5) Pre: 550 and second-year standing, or permission of chairperson.

#### 560 Neuromuscular Therapeutics (5)

Physical therapy management of individuals with, and the prevention of, impaired motor function and sensory integrity associated with neuromuscular dysfunction. (Lec. 5) Pre: 511 and second-year standing, or permission of chairperson.

#### 570 Cardiopulmonary Physical Therapy (5)

Physiological basis, testing and evaluation, treatment, and administration of programs for cardiac and pulmonary-diseased patients requiring physical therapy. (Lec. 5) Pre: 520 and second-year standing, or permission of chairperson.

#### 574 Sports Physical Therapy (2)

Advanced knowledge and competency in sports injury evaluation and treatment are developed. Additional coverage of sports injury prevention, athletic screening, medical intervention, interdisciplinary coordination, and patient or public education is provided. (Lec. 1, Lab. 3) Pre: 550 or permission of instructor.

#### 575 Physical Therapy Internship I (5)

Assignment to various clinical settings that provide supervised experiences with practicing physical therapists and support personnel. Specific setting and rotational time schedule are determined by the student, academic clinical coordinator, and clinical site. (Practicum) Pre: permission of instructor.

#### 576 Broadening Experiences in Physical Therapy (2)

Provision of physical therapy service in a non-traditional setting or with a unique population. Preparatory work and two-week hands-on experience. (Lec. 1, Practicum in approved setting) Pre: enrolled in D.P.T. Program and with permission of the instructor. May be repeated for credit.

#### 580 Pediatric Physical Therapy (3)

Physical therapy assessment, care planning, and treatment of the pediatric population in diverse practice settings. Psychosocial implications of working with children will be addressed. Laboratory sessions will provide some hands-on experience with infants and children with a variety of diagnoses. (Lec. 3) Pre: 511 and second-year standing, or permission of the chairperson.

#### 585 Physical Therapy Internship II (5)

Assignment to various clinical settings that provide supervised experiences with practicing physical therapists and support personnel. Specific setting and rotational time schedule are determined by the student, academic clinical coordinator, and clinical site. (Practicum) Pre: permission of instructor.

#### 586 Physical Therapy in Geriatric Populations (2)

Geriatric and aging issues related to physical therapy practice. Evaluation and treatment strategies for disorders affecting adults, including biology, cognition, and motor function. Exposure to geriatric populations. (Lec. 2) Pre: second-year standing or permission of chairperson.

#### 595 Physical Therapy Internship III (5)

Assignment to various clinical settings that provide supervised experiences with practicing physical therapists and support personnel. Selection of clinical specialty area of student's interest is considered in determination of the setting. (Practicum) Pre: permission of instructor.

#### 600 Foundations of Evidence-Based Practice (3)

Presentation and application of principles of evidence-based practice as related to current physical therapy practice, theory development, and scientific literature. Preparation of proposal through literature review. (Lec. 3) Pre: first-year standing or permission of chairperson.

#### 605 Special Topics and Professional Preparation in Physical Therapy (2)

Integration of the art and science of physical therapy with the delivery of services. Comprehensive review of systems, including evaluation and interventions as they relate to physical therapy. (Lec. 2) Pre: third-year standing, or permission of chairperson.

#### 610 Evidence-Based Inquiry I (1)

Introduces the student to the concept of evidence-based inquiry and its importance in the physical therapy profession. Initial stages of an evidence-based inquiry project formulated with the guidance of a faculty advisor. (Independent Study) Pre: 600 and second-year standing, or permission of chairperson.

#### 615 Differential Diagnosis (3)

Development of skill in differential diagnosis and referral focusing on level of decisions, triage, and interaction with other diagnostic professionals.

Medical diagnostics, test considerations, and referral strategies are developed through practical diagnostic clinical rotation. (Lec. 3) Pre: 542 and second-year standing or permission of chairperson.

#### 620 Evidence-Based Inquiry II (3)

Guides the student through the refinement and focusing of a previously identified multi-phase inquiry project in which evidence is the critical feature. Identification of target audience, delineation of scope of evidence to be gathered occurs along with initial evidence collection. (Independent Study) Pre: 610 and second-year standing, or permission of chairperson.

#### 630 Evidence-Based Inquiry III (3)

Final data gathering, analysis/synthesis, and documentation aspects of a multi-phase inquiry project in which evidence is the critical feature. Statistical analysis and literature synthesis are potential techniques to be utilized. (Independent Study) Pre: 620 and third-year standing, or permission of chairperson.

#### 640 Evidence-Based Inquiry IV (1)

Formal dissemination of a multi-phase inquiry project in which evidence is the critical feature. The form this dissemination takes will be individual to the specific project, but may include a research poster, scholarly publication, newsletters or other professional scholarly sources. (Independent Study) Pre: 630 and third-year standing, or permission of chairperson.

#### 655 Diagnostic Imaging (3)

Referral and interpretation of diagnostic images relevant in musculoskeletal assessment and management. Radiologic anatomy, normal variants, and pathological and traumatic conditions reviewed. CT scan, magnetic resonance imaging, ultrasonography, angiography addressed. (Lec. 3) Pre: second-year standing, or permission of chairperson.

#### 672 Pharmacological Considerations in Physical Therapy (3)

Pharmacological actions, interventions, and interactions that physical therapists encounter in their treatment of patients undergoing physical rehabilitation. Drug administration appropriate to physical therapy practice. (Lec. 3) Pre: third-year standing, or permission of chairperson.

## Physics (PHY)

*Chairperson: Professor Northby*

#### 101 Physics and Physicists (1)

Survey course spotlighting current developments in physics and examining the way scientific research is carried out. (Lec. 1)

#### 109 Introduction to Physics (3)

Appreciation of the physical environment and an introduction to the principles and theories of contemporary physics. Recommended for elementary education majors. (Lec. 3) Pre: concurrent enroll-

ment in 110. Not open to students with credit in 111, 112, 203, 204, or 205. (N)

**110 Laboratory for Introduction to Physics (1)**  
Demonstrations and laboratory exercises related to 109. (Lab. 2) Pre: concurrent enrollment in 109.

**111, 112 General Physics I, II (3 each)**

111: Mechanics, heat, and sound. 112: Optics, electricity, magnetism, and modern physics. Noncalculus presentation of fundamental physics. (Lec. 3) Pre: concurrent enrollment in 185 for 111 and 186 for 112. (N)

**140 The Ideas of Physics (3)**

A nonmathematical presentation of classical and modern physics illustrated by lecture demonstrations. (Lec. 3) Of particular interest to liberal arts students. (N)

**185, 186 Laboratory for General Physics I, II (1 each)**

Selected laboratory exercises applicable to materials in 111, 112. (Lab. 2) Pre: concurrent enrollment in 111 for 185 and 112 for 186. (N)

**203 Elementary Physics I (3)**

Introduction to Newtonian mechanics. Kinematics and dynamics of particles and systems of particles. Motion of rigid bodies and oscillatory motion. Conservation principles. (Lec. 3) Pre: credit or concurrent enrollment in MTH 141 and concurrent enrollment in 273. Intended for science or engineering majors. Not open to students with credit in 213. (N)

**204 Elementary Physics II (3)**

Introduction to electricity and magnetism, leading to Maxwell's equations. Electric fields and Gauss' law; magnetic fields and Ampere's law. Capacitance and inductance, DC and AC circuits. Electromagnetic waves. (Lec. 3) Pre: 203, credit or concurrent enrollment in MTH 142, and concurrent enrollment in 274. Intended for science or engineering majors. Not open to students with credit in 214. (N)

**205 Elementary Physics III (3)**

Introduction to topics of thermodynamics, kinetic theory, wave motion, acoustics, and optics. (Lec. 3) Pre: 203; credit or concurrent enrollment in MTH 243 or 362; concurrent enrollment in PHY 275. Intended for science or engineering majors. Not open to students with credit in 213, 214. (N)

**273, 274, 275 Elementary Physics Laboratory I, II, III (1 each)**

Laboratory exercises and recitation sessions related to topics in 203, 204, and 205. (Lab. 3) Pre: concurrent enrollment in 203, 204, and 205. (N)

**306 Elementary Modern Physics (3)**

Introduction to relativistic and quantum physics: special relativity theory, structure of atoms, molecules, nuclei, and solids including semiconductor devices; wave and particle properties (Lec. 3) Pre: 204, 205, or ELE 210. Not open to students with credit in 341.

**322 Mechanics (3)**

Introduction to Newtonian statics and dynamics using vector analysis; particle motion, Lagrange's equations; rigid body motion. Application to various topics in physical mechanics. (Lec. 3) Pre: 204 and MTH 244.

**331 Electricity and Magnetism (3)**

Electrostatic fields and dielectric materials; magnetic fields, magnetic induction, and magnetic materials; introduction to Maxwell's equations. (Lec. 3) Pre: 204 and MTH 243.

**334 (or AST 334) Optics (3)**

Geometrical and physical optics; thick lens optics, interference, diffraction, polarization. (Lec. 3) Pre: 112, 214, or 205.

**341 Introductory Modern Physics (3)**

The development and current status of major advances in 20th-century physics, such as special relativity, kinetic theory, structure of atoms, molecules and nuclei, wave and particle properties of matter, thermionic and photoelectric effects. (Lec. 3) Pre: 213, 214, and MTH 142. MTH 243 and ELE 210 can be substituted for 214. Not open to students with credit in 306.

**381, 382 Advanced Laboratory Physics (3 each)**

Key experiments covering a wide range of disciplines including nuclear physics, properties of the electron, magnetism thermodynamics, and optics. Quantitative analysis is stressed, including statistics and curve fitting. Technical skills are developed. (Lab. 6) Pre: 204 and 205.

**401, 402 Seminar in Physics (1 each)**

Preparation and presentation of papers on selected topics in physics. (Seminar) Required of all undergraduate and graduate students in physics; one semester required for all senior physics majors.

**410 Computational Physics (3)**

Development and application of computer techniques to classical and quantum physics problems. Emphasis will be on approximation techniques and numerical methods for solving matrix, integral, and differential equations arising in physics. (Lec. 2, Lab. 3) Pre: MTH 215 and CSC 200 or CSC 201 or CSC 211; credit or concurrent enrollment in MTH 244 and PHY 306.

**420 Introduction to Thermodynamics and Statistical Mechanics (3)**

Emphasis on laws of thermodynamics and properties of thermodynamic systems, kinetic theory of gases, molecular velocity distributions, transport phenomena, Maxwell-Boltzmann statistics. (Lec. 3) Pre: 205 and MTH 243.

**425 Acoustics (3)**

Mathematical theory of vibrating systems; harmonic wave motion. Topics include transmission and absorption of sound waves, microphones, psycho-

acoustics, underwater acoustics, and ultrasonics. (Lec. 3) Pre: permission of chairperson.

**451 Introduction to Quantum Mechanics (3)**

Particle-wave duality, uncertainty principle; Schrödinger equation: eigenvalues, wavefunctions, time dependence; Dirac notation; Heisenberg representation: operators, matrices, eigenvectors; angular momentum: spin and polarization, Pauli matrices, hydrogen atom, application to quantum computation; symmetries: conservation laws, fermions and bosons. (Lec. 3) Pre: 306, 322, MTH 215 and 244.

**452 Quantum Mechanics: Techniques and Applications (3)**

Approximation techniques including time-dependent and time-independent perturbation theory, WKB, variational method, Born, Hartree, and computational techniques. Applications to atomic and molecular structure, model potentials, radiative transitions, and scattering. (Lec. 3) Pre: 451 and MTH 461.

**455 Introduction to Solid-State Physics (3)**

Crystal structure, thermal, electrical, and magnetic properties of solids. Electron gas theory of metals, band theory of solids. Semiconductors. (Lec. 3) Pre: 451 and MTH 243.

**483, 484 (or AST 483, 484 or OCG 483, 484) Laboratory and Research Problems in Physics (3 each)**

Research in current areas of physics. Students perform research projects with individual faculty members. Students in physics and physical oceanography may coordinate their research project with a faculty member of the Graduate School of Oceanography. (Lec. 1, Lab. 6) Pre: 381 and 382.

**491, 492 (or AST 491, 492) Special Problems (1-6 each)**

Advanced work under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study)

**510 Mathematical Methods of Physics I (3)**

Topics designed to include applications in physics. Vector and tensor analysis; linear algebra; coordinate systems. Determinants, matrices; introductory group theory. Infinite series, complex analysis, analytic properties, conformal mapping, calculus of residues. Fourier analysis and Laplace transforms. (Lec. 3) Pre: permission of chairperson.

**520 Classical Dynamics (3)**

Newton's laws. Conservation theorems and symmetry properties. Lagrangian mechanics. Central force motion. Dynamics of rigid bodies. Hamiltonian mechanics. Canonical transformations. Action-angle coordinates. Hamilton-Jacobi theory. Deterministic chaos. Relativistic mechanics. (Lec. 3) Pre: credit or concurrent enrollment in 510.

**525 Statistical Physics I (3)**

Equilibrium thermodynamics. Thermodynamics of phase transitions. Elements of kinetic theory. Statisti-

cal ensembles and partition functions. Classical and quantum equilibrium statistical mechanics. (Lec. 3) Pre: 420 or equivalent, 510.

### 530 Electromagnetism I (3)

Electrostatics, including boundary value problem. Multipoles, electrostatics of macroscopic media, dielectrics. Magnetostatics. Time-varying fields, Maxwell equations, conservation laws. Plane electromagnetic waves, wave propagation. Wave guides, resonant cavities. Magnetic materials. (Lec. 3) Pre: credit or concurrent enrollment in 510 and 520.

### 560 Experimental Methods in Condensed Matter Science (3)

Fundamental experiments on topics related to departmental research. Experimental methodology. (Lec. 2, Lab. 3) Pre: 484 or equivalent.

### 570 Quantum Mechanics I (3)

Dirac notation. Matrix representations, observables, uncertainty relations. Time evolution; Schroedinger and Heisenberg pictures. Schroedinger equation applications. Propagators and Feynman path integrals. Aharonov-Bohm effect. Angular momentum; Wigner-Eckart theorem. (Lec. 3) Pre: credit or concurrent enrollment in 510 and 520.

### 577, 578 Seminar in Sensors and Surface Technology (1)

Students, faculty, and invited outside speakers present and discuss selected topics related to research interests of the Sensors and Surface Technology Partnership. (Seminar) Pre: permission of instructor. May be repeated. S/U credit.

### 580 Condensed Matter Physics I (3)

Drude and Sommerfeld theories. Crystal lattices and symmetries. Bragg scattering. Properties and calculation of electron spectra. Fermi surfaces of metals. Electrons in magnetic field. De Haas – van Alphen effect and Phonons. Electron-phonon interaction. Defects in solids. (Lec. 3) Pre: 525, 570 or permission of chair.

### 590 Faculty Project (1–6)

A special project directly related to the research program of an individual faculty member. (Independent Study) Pre: permission of chairperson. Not to exceed 6 credits.

### 591 Special Problems (1–6)

Advanced study under the supervision of a faculty member arranged to suit the individual needs of the student. (Independent Study) Pre: permission of chairperson. Not to exceed 6 credits.

### 599 Master's Thesis Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### 610 Mathematical Methods of Physics II (3)

Topics designed to include applications in physics. Ordinary and partial differential equations; Sturm-

Liouville theory. Numerical methods and computational techniques. Probability and statistics. Integral transforms. Integral equations; Green's functions. Special functions of mathematical physics. (Lec. 3) Pre: 510.

### 625 Statistical Physics II (3)

Equilibrium critical phenomena (critical exponents, scaling relations, multicritical phenomena). Exact solutions. Renormalization group theory and other approximate methods. Critical behavior of magnets, fluids, and surfaces. (Lec. 3) Pre: 525 and 670.

### 626 Statistical Physics III (3)

Stochastic processes. Markov condition. Master equation. Fokker-Planck equation. Brownian motion. Langevin equation. Transport phenomena. Onsager theory of irreversible processes near equilibrium. Boltzmann equation. Linear response theory, fluctuation-dissipation theorem. (Lec. 3) Pre: 525.

### 630 Electromagnetism II (3)

Radiating systems, scattering, and diffraction. Special theory of relativity. Dynamics of relativistic particles and electromagnetic fields. Collisions between charged particles, energy loss and scattering. Radiation by moving charges. Multipole fields. (Lec. 3) Pre: 530.

### 660 Nuclear and Particle Physics (3)

Weak, strong, and electromagnetic interactions. Nucleon-nucleon potential, shell model, optical model. Isospin, unitary symmetry, quark model of hadrons. Scattering and reaction theory of few-body systems. Deuteron. Relativistic nuclear and particle phenomena. (Lec. 3) Pre: 570 and 670.

### 670 Quantum Mechanics II (3)

Symmetry (parity, translation, time-reversal). Time-independent (dependent) perturbation theory, variational methods. Identical particles. Scattering theory (Lippman-Schwinger equation, Born series, partial waves, resonances, optical theorem, inelastic scattering). Applications. Relativistic quantum mechanics. (Lec. 3) Pre: 570 or permission of chairperson.

### 672 Quantum Mechanics III (3)

Atomic systems (structure, semiclassical radiation theory, collisions). Quantum fields (scalar, spin-1/2, electromagnetic). Applications: quantum field theory (Feynman diagrams in QED and weak interactions, renormalization). Fock space. Many-body theory. (Lec. 3) Pre: 670. In alternate years. Next offered spring 2009.

### 680 Condensed Matter Physics II (3)

Interacting systems. Green's functions. Diagrammatic methods. Applications to superconductivity. Fluctuations. Functional integration. Generalized susceptibility and dielectric response. Fluctuation-dissipation theorem. Structure function. (Lec. 3) Pre: 530, 580 or permission of chair.

### 690 Topics in Physics (3)

Advanced topics in areas of research specializations: a) neutron physics; b) quantum fluids; c) magnetism; d) surface physics; e) nonlinear phenomena; f) advanced quantum physics; g) nuclear physics; h) low-temperature physics. (Lec. 3) Pre: permission of chairperson.

### 691 Advanced Special Topics (1–6)

Special topics related to current developments by visiting or permanent faculty. (Lec. 1–6) Pre: permission of instructor.

### 699 Doctoral Dissertation Research

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

### 930 Workshop in Physics Topics for Teachers (0–3 each)

Especially designed for teachers of physical sciences. Basic topics in physics from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification.

## Plant Sciences (PLS)

Chairperson: Professor Alm

### 101 Freshman Inquiry into Plant Sciences (1)

Introduction for freshmen to the opportunities, careers, research activities, applied outreach, and educational programs in the Department of Plant Sciences. Interact weekly with faculty. Explore hands-on modules. (Lec. 1) S/U credit.

### 107 (or BIO 107) Plant Biology Seminar (1)

A seminar series offered by faculty, graduate students, and visiting professionals for the purpose of acquainting students with career opportunities provided by the plant biology program. (Seminar)

### 150 Plant Biology for Gardeners (3)

Fundamentals of plant biology, emphasizing the structure, physiology, and ecology of vascular plants common to gardens and landscaped environments. (Lec. 3) (N)

### 190 Issues in Biotechnology (3)

See Aquaculture and Fisheries Science 190. (N)

### 200 Introduction to Plant Protection (4)

Basic study of weeds, insects, and disease agents, and the problems they cause. Recognition of important plant pests and application of integrated cultural, chemical, and biological pest management procedures. (Lec. 4) Pre: BIO 102 or PLS 150 or permission of instructor.

### 205 Population, Environment, and Plant Biology I (4)

Solving problems related to the interaction of population growth, environment, cell behavior, and plant productivity, as seen from the perspective of

competitive evolution. (Lec. 3, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor.

**210 Plant Protection Practicum (2)**

Introduction to practical aspects of plant protection, concentrating on field diagnostic techniques and development of analytical and observation skills. Diagnostics are primarily an interactive field activity, supplemented by microscopy, report writing, and oral presentations. (Practicum) Pre: credit or concurrent enrollment in 200 or permission of instructor.

**215 Propagation of Plant Materials (4)**

Theory and practice of the propagation of ornamental plants by seed, cuttings, grafting, and tissue culture. (Lec. 2 Lab. 4) Pre: BIO 102 or PLS 150 or permission of instructor.

**233 Floral Art (3)**

Theory and practice in the art of flower and plant arrangement for the home, show, and special occasions. History, elements, and principles of design and color. (Lec. 1, Lab. 4) (A) or (N)

**250 Plant Breeding and Genetics (4)**

Introduction to the general principles of plant breeding, with emphasis on the application of genetic principles in plant improvement strategies. (Lec. 3, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor.

**255 Horticultural Plant Science (3)**

Fundamental concepts underlying life functions in plants and their horticultural implications and relevancy. Emphasis on plant physiology, plant nutrition, and plant reproduction and how they relate to horticultural plant production. (Lec. 3) Pre: BIO 102 or PLS 150 and CHM 103 or 124 or permission of instructor.

**301 Nursery Crop Production and Management (3)**

Foundation of nursery management and woody plant production practices. History and organization of the nursery industry, land selection and management, plant culture, growing structures and equipment, and recent innovations. (Lec. 2, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor. In alternate years. Next offered spring 2009.

**306 Landscape Management and Arboriculture (3)**

Culture of new and established trees, shrubs, and vines in the landscape. Practical exposure to planting, pruning, fertilization, and plant protection. Prepares the student for Arborist's Certification Examination. (Lec. 2, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor.

**311 Fruit Culture (3)**

Principles of fruit production with emphasis on home gardens. Topics include propagation, planting, soils, fertilization, cultural practices, pruning and storage of tree and small fruits and dwarfs or semi-dwarf

stocks. (Lec. 2, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor. In alternate years.

**320 Landscape Design (3)**

Examination of landscape design principles and practices including introduction to landscape graphics, preliminary design, and planting design. (Lec. 3) Not open to landscape architecture majors.

**322 Power Units (3)**

Principles of operation, maintenance, and adjustment of power units including gasoline and diesel engines and electric motors. Emphasis on tractors and other power units important in farm, nursery, greenhouse, and grounds maintenance operations. (Lec. 2, Lab. 2) In alternate years.

**331 Floriculture and Greenhouse Management (3)**

The greenhouse environment and its relation to the culture of specific plants. Principles governing the production and culture of plants under controlled temperature, humidity, light, and modified atmospheres. Greenhouse construction and environmental control. (Lec. 3) Pre: BIO 102 or PLS 150 or permission of instructor. In alternate years. Next offered spring 2008.

**332 Plant Pathology: Introduction to Plant Diseases**

See Biological Sciences 332.

**335 Commercial Floral Design and Flower Shop Practices (3)**

Advanced floral design including wedding, funeral, church, and holiday arrangements. Flower shop practices, buying, selling, and handling cut flowers and potted plants. (Lec. 1, Lab. 4) Pre: 233 or permission of instructor. (A) [D]

**341 Introduction to Turf Management (3)**

Fundamental aspects of turfgrass science including identification, propagation, fertilization, pest control, and other soil-plant relationships. (Lec. 2, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor.

**350 Herbaceous Garden Plants (3)**

Identification and use of annual and perennial herbaceous ornamental plants in the landscape. Emphasis on sustainable landscaping and the use of native plants. (Lec. 2, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor.

**353 Landscape Plants I**

See Landscape Architecture 353.

**354 Landscape Plants II**

See Landscape Architecture 354.

**361 Weed Science (3)**

Ecological and cultural aspects of weed problems, physiology of herbicide action, selected problem areas in weed control and plant identification. (Lec. 2, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor. In alternate years. Next offered fall 2007.

**390 Irrigation Technology (3)**

A study of the science and technology of obtaining, applying, and managing water as it relates to the culture of field, forage, vegetable, turf, and ornamental crops. (Lec. 2, Lab. 2) Service learning. Pre: MTH 107 or 108 or 111 or permission of instructor. In alternate years.

**393, 394 Plant Protection Clinic (3 each)**

Practical experience in plant pest detection and identification, pest management techniques and equipment. (Lec. 1, Lab. 4) Pre: ENT 305 or 387 and PLS 332 or 440 and permission of instructor.

**399 Plant Sciences Internship (1-6)**

Directed work experience programs at nurseries, turf farms, greenhouses, plant breeding farms, arboreta, research farms, or laboratories. (Practicum) Pre: BIO 102 or PLS 150 or permission of instructor. May be repeated for a maximum of 6 credits. S/U credit.

**401, 402 Plant Sciences Seminar (1 each)**

Presentations and discussions of current topics of concern to producers and consumers of plants and plant products, including plant protection. (Seminar)

**406 Senior Thesis Research (3-6)**

Seniors conduct research approved by a faculty mentor. Research results are written and orally presented to a group of faculty for a grade. (Independent Study) Pre: permission of instructor. May be repeated for up to 6 credits. Not for graduate credit.

**436 Floriculture and Greenhouse Crop Production (4)**

Status of floriculture industry and commercial production of greenhouse crops including scheduling, marketing, and postharvest handling. Student project required. (Lec. 3, Lab. 2) Pre: BIO 102 or PLS 150 or permission of instructor.

**440 Diseases of Turf and Ornamentals (3)**

Diagnosis, epidemiology, and control measures of common turf and ornamental plant diseases found in the Northeast United States. (Lec. 3) Pre: 200 or 332. Not for graduate credit.

**441 Plant Disease Laboratory (1)**

Laboratory and field diagnosis of turf diseases and diseases of trees and ornamental shrubs. (Lab. 2) Pre: concurrent enrollment in 440.

**442 Advanced Turf Management (3)**

Establishment and maintenance practices for specialty turfgrass areas (golf courses, athletic fields, and parks) including design and construction specifications and budget management. (Lec. 3) Pre: 341 and 440 or permission of instructor. Not for graduate credit.

**471 Plant Improvement (4)**

Traditional breeding techniques and methods used for germplasm development and enhancement. Plant cell and tissue culture methodologies as they relate to the improvement of plant varieties through

biotechnology. (Lec. 3, Lab. 2) Pre: 250 and 215 or permission of instructor. Not for graduate credit. Offered in alternate years.

#### 475 (or NRS 475) Plant Nutrition and Soil Fertility (4)

The plant-soil system. Availability and mobility of mineral nutrients in soil and their uptake, distribution, and function in plants. Plant energy relations and organic nutrition. Laboratory: hydroponic plant culture, ion interactions, radioisotopes, and deficiency symptoms. (Lec. 3, Lab. 2) Pre: NRS 212 and PLS 315 and BIO 346.

#### 491, 492 Special Projects and Independent Study (1-3 each)

Special work to meet individual needs of students in various fields of plant nutrition, propagation, growth and development, garden design, site planning, plant pathology, entomology, and related subjects. (Independent Study) Pre: permission of instructor by override only.

#### 501, 502 Graduate Seminar in Plant Sciences (1 each)

Presentation of technical reports and discussion of current research papers in crop science, landscape ecology, growth and development of economic plants, and production, protection, and management of economic crops. (Seminar)

#### 508 Seminar in Biological Literature

See Biological Sciences 508.

#### 540 Diseases of Turf and Ornamentals (3)

Disease diagnosis, epidemiology, and control measures of common turf and ornamental diseases found in the Northeast United States. (Lec. 3) Pre: 200 or 332.

#### 542 Advanced Turf Management (3)

Establishment and maintenance practices for specialty turfgrass areas (golf course, athletic fields, and parks) including design and construction specifications and budget management. (Lec. 3) Pre: 341, 440.

#### 571 Plant Improvement (4)

Traditional breeding techniques and methods used for germplasm development and enhancement. Plant cell and tissue culture methodologies as they relate to the improvement of plant varieties through biotechnology. (Lec. 3, Lab. 1) Pre: 250 and 215 or permission of instructor. Offered alternate years.

#### 591, 592 Nonthesis Research in Plant Sciences (1-3 each)

Advanced work under the supervision of researchers to expand research experience into areas other than those related to thesis research. Arranged to suit individual requirements. (Independent Study) Pre: permission of instructor.

*Note: For other related courses, see BIO 311, 321, 323, 432, 437, 447, 453, 515, 521, 522, 524, 534, 536, 554, 571, 572 and MIC 521, 552.*

## Political Science (PSC)

*Chairperson: Professor Tyler*

#### 109 (or MTH 109) Politics and Mathematics (3)

Elementary mathematical treatments of voting systems and voting paradoxes; models of escalation, conflict, and deterrence, measures of political power, etc. (Lec. 3) (MQ)

#### 113 American Politics (3)

Basic principles of the government of the United States: constitutionalism, separation of powers, federalism, civil liberties; politics; legislative, executive, and judicial organization; functions of government. (Lec. 2, Rec. 1) (S) [D]

#### 116 International Politics (3)

Nature of the state system, foundations of national power, means of exercising power in the interaction of states. Current international problems. (Lec. 2, Rec. 1) (S) [D]

#### 201 Introduction to Comparative Politics (3)

An examination of different governmental systems and political institutions. Illustrations and comparisons from the Americas, Europe, and the developing nations. (Lec. 3) Pre: 116. (S) [D]

#### 221 State and Local Government (3)

Survey of institutional framework of American state and local governments. Consideration of current events and controversies at state and local levels. (Lec. 3) Pre: 113.

#### 240 Major Political Ideologies (3)

Introduction to and analysis of fascism, communism, socialism, and capitalism. An examination of the contemporary meaning of liberalism, radicalism, and conservatism. (Lec. 3)

#### 261 The President and Public Policy (3)

Examines the role of the president within the American political process. (Lec. 3) Pre: 113 and freshman or sophomore standing. Students may not take both 261 and 461 for credit.

#### 274 (or SOC 274) Criminal Justice System (3)

The American system of criminal justice, general processing of cases, principal actors, study of theories of criminal law, and pretrial detention and sentencing. (Lec. 3) Pre: 113. (S) [D]

#### 288 The American Legal System (3)

Political and social analysis of the American legal system, particularly at trial court and street levels, and roles of participants in that system with observation of local courts. (Lec. 3) Pre: 113. (S)

#### 300 Challenge of Nuclear Arms (3)

Nuclear weapons addressed from a range of perspectives. Emphasis on the strategic, political, social, and moral issues and controversies raised by the potential for nuclear war. (Lec. 3) Pre: 3 credits in the social sciences recommended or permission of instructor.

#### 301 Comparative Politics (3)

An exploration of the theoretical concepts underlying the study of different political systems; in particular, issues of modernization, political culture, and relative economic and political performance. (Lec. 3) Pre: 201 or permission of instructor.

#### 303 The Politics of the Vietnam War (3)

The politics of the Vietnam War addressed from a range of perspectives. Emphasis on the political, social, strategic, legal, and moral issues raised by the Vietnam War and its aftermath. (Lec. 3) Pre: 113 or 116 or permission of instructor.

#### 304 Introduction to Public Administration (3)

An overview of the field of public administration. Consideration will be given to the relationship of public organizations with society. Examination of major administrative theories and their influence upon contemporary organizational environment. (Lec. 3) Pre: 113 or permission of instructor.

#### 305 Politics in Rhode Island (3)

Exploration of politics and policy process in an age of New Federalism in Rhode Island. Examination of the political development of the state and the contemporary character of state politics. Pre: six credits in social sciences. (Lec. 3)

#### 312 Topics in Political Science (3)

Critical study of selected topics. Subject will vary according to the expertise and availability of instructors. (Lec. 3) Open to any major. May be repeated for a total of 9 credits.

#### 321 Politics and Problems of Israel (3)

Analysis of the evolution of political institutions and the dynamics of public policy in Israel. Emphasis on contemporary political problems. (Lec. 3) Pre: 113 or 116 or permission of instructor. Professor Zucker's section is writing intensive. [WI]

#### 341 Political Theory: Plato to Machiavelli (3)

Major political philosophies from Plato to Machiavelli and their influence on such key concepts as justice, equality, and political obligation. (Lec. 3) (L)

#### 342 Political Theory: Modern and Contemporary (3)

Continuation of 341. Rousseau to the present. (Lec. 3) Pre: 113 and 116. (L)

#### 344 International Financial Economics

See Economics 344.

**350 From Cold War to Cold Peace (3)**

Provides essential political and historical background to understanding the evolution of U.S. and Soviet relations over the past 50 years. (Lec. 3) Pre: 116.

**365 Political Parties and Practical Politics (3)**

Analysis of the American party process with some attention to comparative party systems. History, organization, functions, methods, problems, and prospects for reform. (Lec. 3) Pre: 113. Professor Zucker's section is writing intensive. [WI]

**368 Public Opinion (3)**

Examination of public opinion and formative influences upon it. Role and implications of public opinion in governmental process. (Lec. 3) Pre: 113.

**369 Legislative Process and Public Policy (3)**

Analysis of American legislative bodies, particularly Congress, some attention to comparative legislatures. Structure, organization, functions of Congress analyzed in relation to its role in determining public policy. (Lec. 3) Pre: 113. Professor Zucker's section is writing intensive. [WI]

**370 Politics and Media (3)**

Analysis of the relationship between the mass media in the United States and the political process. Emphasis on the impact of the media on both domestic and foreign policy processes. Pre: 113 or 116, or permission of instructor.

**375, 376 Field Experience in Practical Politics (1-3 each)**

Supervised experience in local, state, and national units of government, political organizations, private and public community agencies. Students must have placement description, faculty supervisor, and outline of academic component of experience prior to registration. (Practicum) Pre: 12 credits in the social sciences including 6 credits in political science and permission of instructor. May be repeated for a maximum of 6 credits. S/U credit.

**377 Politics of China (3)**

Institutions of the Chinese system including the Communist Party, the state system, the bureaucracy, and the army. Emphasis on China's economic and social progress and relations with other nations. (Lec. 3) Pre: 116 or equivalent recommended.

**380 Civil Rights Movement**

See African and African American Studies 380.

**401 Comparative European Politics (3)**

Concepts and methodologies relative to the study of comparative politics. Structural-functional approach to survey of the formal and informal features of the political systems of Great Britain, France, Germany, Soviet Union, and one other country. (Lec. 3)

**402 Environmental Policy and Politics (3)**

Seminar in the politics and public policy associated with environmental pollution. (Lec. 3) Pre: 113 and junior or senior standing.

**403 Global Ecopolitics (3)**

Seminar focuses on the international politics of global pollution, marine pollution, atmospheric pollution, tropical deforestation, and conservation. (Lec. 3) Pre: 116 or 402.

**404 The Assassination of John F. Kennedy (3)**

A rigorous examination of the JFK assassination, the political climate in which it occurred, the evidence surrounding it, and the theoretical explanations of who was responsible and why. (Lec. 3) Pre: 6 credits of PSC beyond 113. Not for graduate credit.

**406 Russian Foreign Policy (3)**

An upper-level introduction to the issues of Russian foreign policy, including relations with newly formed states of the CIS. (Lec. 3) Pre: 6 credits in the social sciences recommended or permission of instructor. Offered in alternate years.

**407 Politics of the Russian Commonwealth (3)**

An upper-level introduction to the politics and society of Russia and the newly created states of the CIS. (Lec. 3) Pre: six credits in the social sciences recommended or permission of instructor. Offered in alternate years. (F)

**408 (or AAF 408) African Governments and Politics (3)**

Political developments in the new nations of sub-Saharan Africa. Main stress is functional: role of parties as integrative forces, democratic centralism, one-party states, African political thought, and common developmental problems. (Lec. 3) Pre: 113 and 116.

**410 Issues in African Development**

See African and African-American Studies 410.

**415 Dynamics of Social Change in the Caribbean**

See African and African American Studies 415.

**420 Nonviolence and Change in the Nuclear Age (3)**

Focuses on the philosophies and political participation of individuals and movements working non-violently for social change and conflict resolution from M. Gandhi and M.L. King to the present within America and globally. (Lec. 3) Pre: 113 or 116.

**422 Comparative American State Politics (3)**

Comparative study of American state politics and government, focusing on public policy formation and execution. Emphasis on contemporary issues. (Lec. 3) Pre: 221 and STA 308 or equivalents, or permission of instructor.

**426 Issues in Corrections**

See Sociology 426.

**431 International Relations (3)**

Analysis of the various theories of international relations and study of the major forces and events shaping the politics of the Great Powers. (Lec. 3) Pre: 116.

**432 International Government (3)**

General development of international government, with particular attention to structure, methods, and operations of the League of Nations, the United Nations, and related agencies. Problems of security, conflict resolution, and social and economic issues. (Lec. 3) Pre: 116.

**434 American Foreign Policy (3)**

Analysis of the institutions, techniques, and instruments of policy making and the execution of foreign policy. (Lec. 3) Pre: 116.

**440 The Politics of Being Mortal (3)**

Seminar on how attitudes toward death affect political values and priorities, especially in regard to capitalism and the threat of nuclear war. (Lec. 3) Pre: 341, 342, or permission of instructor.

**441 Women and Politics (3)**

Explores the role of women in the American political system, as voters, campaign activists, and office holders, and as members of organized groups in the policy-making process. (Lec. 3) Pre: 113 or permission of instructor. Not for graduate credit.

**443 Twenty-first Century Political Theory (3)**

Important political theorists of this century, particularly as they interpret the basis of political obligation and weigh the question of violent political change. (Lec. 3) Pre: permission of instructor. Offered every third year.

**455, 456 Directed Study or Research (3 each)**

Special work arranged to meet the needs of individual students who desire advanced work in political science. (Independent Study) Pre: permission of chairperson.

**461 The American Presidency (3)**

Presidential leadership and decision making, with emphasis on growth in power and prestige of the presidency, exercise of presidential influence in conduct of government, and presidential initiative in formulating and developing national policies and priorities. (Lec. 3) Pre: 113.

**466 (or AAF 466) Urban Problems (3)**

Contemporary and emerging problems of urban affairs. Discussion, reading, and assignments on the interaction among urban change, development of social institutions, and formation of public policy. (Lec. 3/Online) Pre: 113.

**471 Constitutional Law (3)**

The Supreme Court as a political institution in American democracy. Analysis of leading constitutional decisions exploring adaptation of governmental powers to changed conditions of society, development and function of judicial review, and dynamics of decision making in the Supreme Court. (Lec. 3) Pre: 113.

**472 Civil Liberties (3)**

The problem of human freedom examined in the context of the fundamental rights guaranteed to individuals by the American Constitution. Emphasis on religious liberty, freedom of expression, racial equality, fair criminal procedures, and the protection of personality and privacy. (Lec. 3) Pre: 113.

**476 Policy Issues in Criminal Justice**

See Sociology 476.

**481, 482 Political Science Seminar (3 each)**

Intensive studies in various important fields in political science. Class discussion of assigned readings and student reports. Emphasis on independent research. (Seminar) Pre: 6 credits in political science beyond 113 and 116.

**483 Political Process: Policy Formulation and Execution (3)**

Interrelationships of policy development and administration with particular attention devoted to participants in the process. Specific activities of the executive branch and government policies that affect the structure, composition, and function of the bureaucracy. (Lec. 3) Pre: 113 or permission of instructor.

**485 The Politics of Children's Rights (3)**

Explores the political aspects and their relationship to socioeconomic and cultural factors of major issues that affect children's lives. Focuses on individual and societal rights and responsibilities in America and internationally. (Seminar) Service learning. Pre: six credits in social sciences recommended or permission of instructor.

**487 Rebuilding Our Communities: Theory and Practice (3)**

Seminar examines theories and practices of participatory citizenship in contemporary America. Explores individual and communitarian rights and responsibilities within a democratic civic culture. Includes a 40-hour community service experience. (Seminar) Service learning. Pre: senior and graduate level or juniors by permission.

**491 Principles of Public Administration (3)**

Principles of public administration, structure and organization, financial management, administrative responsibility, and the relation between the administration and other branches of government. (Lec. 3) Pre: 113.

**498 Public Administration and Policy Formulation (3)**

Identification and analysis of factors that affect formulation of public policy, including roles of the executive, the bureaucracy, the legislature, and special interest groups. Evolution of the policy process, particularly at the state and local levels of government. (Lec. 3) Pre: 491 or permission of chairperson.

**501 Administrative Theory (3)**

Theoretical constructs and models in fields of public administration; theories of Weber, Riggs, Dorsey, Simon, Presthus. Lower-level models in subfields of organization, communications, and decision making. Task-oriented subject matter such as personnel, budget, and program administration related to theoretical formulations that seek to explain them. (Lec. 3) Pre: 491 or permission of instructor.

**502 Techniques of Public Management (3)**

Principles and techniques employed in the administration of activities of the public service, such as administrative planning, project scheduling, and budgeting. (Lec. 3) Pre: 491 or permission of instructor.

**503 (or LRS 503) Problems in Public Personnel Administration (3)**

Development of personnel administration, including problems of recruitment, examination, promotion, and staffing within public service. Emphasis on evaluation of employee performance and collective bargaining in public service. (Lec. 3) Pre: graduate standing or permission of instructor.

**504 Ethics in Public Administration (3)**

This course explores through case studies, class discussion, films, and readings how ethical deliberation in the public sector is an essential commitment and skill for public administrators. (Seminar) Pre: graduate standing or permission of instructor.

**505 (or SOC 505) Public Program Evaluation (3)**

Research design and methodologies associated with the evaluation of governmental programs and activities. (Lec. 3) Pre: STA 308 or equivalent or permission of instructor.

**506 Seminar in Budgetary Politics (3)**

Examination of federal, state, and local fiscal and budgetary processes, focusing on the politics of the budgetary process and models of budgeting, with emphasis on contemporary issues. (Seminar)

**507 Government Financial Administration (3)**

Political, administrative, and technical elements of government financial management in public policy settings are examined. Special emphasis is placed on local and state governments and public authorities. (Seminar) Pre: graduate standing or permission of instructor.

**512 Marine Science and Policy Analysis**

See Marine Affairs 512.

**521 International and Comparative Trade Unions and Labor Relations**

See Labor and Industrial Relations 521.

**523 Seminar in Comparative Public Administration (3)**

Theory, practice, and organization of selected European and developing nations' administrative systems. Analysis of selected policies. Influence of

English and French systems on developing systems. Structure-function and ecological analysis. (Seminar) Pre: 491, 501, or permission of instructor.

**524 Seminar in Public Policy Problems (3)**

In-depth exploration of selected problems of policy formulation: intergovernmental relations, regionalization, citizen participation and control, priority setting for public sector programs. (Seminar) Pre: 491, 501, or permission of instructor.

**543 Labor Relations and Collective Bargaining: Public Sector**

See Labor Studies 543

**544 Democracy and Its Critics (3)**

Seminar examining the roots of modern democracy in the social contract theories and analyzing the quality and limits of self-determination in these theories in the light of contemporary politics. (Lec. 3) Pre: 341, 342, or permission of instructor.

**546 Peace and World Order Studies (3)**

This seminar explores various approaches globally to peace-building, world order, and community. Emphasizes conflict resolution, from local to transnational levels, and the search for social justice and human unity. (Seminar) Pre: 420 or permission of instructor.

**553 Scope and Methods of Political Science (3)**

Study of political science as a discipline, its development in relation to other social sciences, and survey of political theories, concepts, and analytic models. (Seminar) Pre: graduate standing.

**555, 556 Directed Study or Research (3 each)**

Special work arranged to meet the individual needs of graduate students in political science. (Independent Study) Pre: permission of chairperson.

**573 Administrative Law (3)**

Legal aspects of interaction among government agencies, individuals, and public interest groups. Systematic analysis of leading cases, evaluating the courts as an instrument for protecting the individual's rights in administrative action. (Lec. 3) Pre: 113.

**577 International Ocean Law**

See Marine Affairs 577.

**580 Seminar in International Relations Theory (3)**

A critical treatment of major international relations theories beginning with an analysis of core theoretical concepts. (Seminar) Pre: honors seniors with permission of instructor or graduate standing.

**581, 582 Special Topics Seminar (3 each)**

Master's-level seminar on special topics in political science not regularly covered in other courses. (Seminar) Pre: graduate or senior standing in political science or permission of instructor. May be repeated up to five times for a total of 15 credits with different topic.

**583 Seminar in American Politics (3)**

Critical consideration of central issues in American political institutions, behavior, and policy making. (Seminar) Pre: honors seniors with permission of instructor or graduate standing.

**584 Seminar in Advanced Comparative Theory (3)**

A critical treatment of the major methodological approaches used in comparative politics beginning with an analysis of core theoretical concepts. (Seminar) Pre: graduate standing; undergraduates only with permission of instructor.

**590 Internship in Public Administration (3-6)**

Participation at an administrative agency under supervision of agency head and a faculty member. Planning, personnel management, research organization, budgeting, interdepartmental relations, informal liaisons that are the hallmark of effective administration. (Practicum) Pre: permission of M.P.A. director. May be taken as one 6-credit unit or two 3-credit units.

**595 Problems of Modernization in Developing Nations**

See Environmental Economics 595.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Portuguese (POR)**

*Chairperson:* Professor Morello

**101 Beginning Portuguese I (3)**

Fundamentals of modern European Portuguese. Emphasis on standard pronunciation, development of familiarity with most common grammar structures, and acquisition of working vocabulary. (Lec. 3) Pre: no prior Portuguese is required. Will not count toward the language requirement if the student has studied Portuguese for more than one year within the last six years. (FC) [D]

**102 Beginning Portuguese II (3)**

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

**103 Intermediate Portuguese I (3)**

Intensive and extensive reading of moderately difficult Portuguese prose, review of grammar structures, idiomatic expressions, conversation practice based on readings. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

**104 Intermediate Portuguese II (3)**

Continuation of 103. Readings of more difficult texts. Class discussion and reports on supplementary readings. Students enrolling in this course should have taken 103 or equivalent. (Lec. 3) (FC) [D]

**200 Portuguese for Spanish Speakers (3)**

An accelerated course in Portuguese for Spanish speakers. (Lec. 3) Pre: SPA 205 or the equivalent. Intended for students in the Spanish International Engineering Program.

**205, 206 Advanced Portuguese (3 each)**

Practice in speaking and writing standard Portuguese. Understanding varieties of Portuguese. Materials of cultural, intellectual, and professional interest. Students enrolling in this course should have taken 104 or equivalent. (Lec. 3) (FC) [D]

**335, 336 Topics in the Literature of the Portuguese-Speaking World (3 each)**

Selected topics in the literatures of continental Portugal and the adjacent islands, Brazil, Cape Verde, Angola, Mozambique. (Lec. 3) Pre: 206 or equivalent or permission of instructor. 205 or 206 may be taken concurrently with permission of instructor. May be repeated for credit as often as topic changes.

**497, 498 Directed Study (3 each)**

For the advanced student. Individual study and reports on problems of special interest. (Independent Study) Pre: one 300-level course in Portuguese, acceptance of project by faculty member, and approval of chair. Not for graduate credit.

**Prior Learning Assessment (PLA)****100 Prior Learning Assessment Portfolio Development (1)**

Identification through self-assessment of student prior learning and appropriate methods for seeking credit. Analysis and application of the process for developing a prior learning portfolio. (Seminar) Pre: matriculated status and permission of the student's academic dean. Offered through the Alan Shawn Feinstein College of Continuing Education. S/U only.

**Psychology (PSY)**

*Chairperson:* Professor Stevenson

**103 Towards Self-Understanding (3)**

Individual and social problems of normal persons. Personality development, social behavior, and adjustment reactions with emphasis on increasing awareness of personal and interpersonal functioning. (Lec. 3/Online) (S) [D]

**113 General Psychology (3)**

Introductory survey course of the major facts and principles of human behavior. Prerequisite for students interested in professional work in psychology or academic fields in which an extended knowledge of psychology is basic. (Lec. 2, Rec. 1) (S) [D]

**232 Developmental Psychology (3)**

Comprehensive understanding of human development and growth from birth to senescence. (Lec. 3) Pre: 113. (S) [D]

**235 Theories of Personality (3)**

Critical survey of the major theories of personality. Emphasis will be placed on the "normal" personality. (Lec. 3) Pre: 113. (S) [D]

**254 Behavior Problems and Personality Disorders (3)**

Evaluation of the more serious behavioral disorders as found in the major forms of character disorders, psychoneuroses, and psychoses. Theories of causation, development and effects of anxiety and defense mechanisms, and interpretation of symptoms and methods of treatment. (Lec. 3) Pre: 113. (S) [D]

**255 Health Psychology (3)**

Investigates the relationship between behavior and health; emphasizes the theory and science of health behavior change; explores specific behaviors and behavior change strategies from an individual and public health perspective. (Lec. 3) (S) [D]

**261 The Alcohol-Troubled Person: Introductory Concepts (3)**

Introductory and basic concepts in alcohol trouble: prevention, identification, early intervention, treatment, education. (Lec. 3)

**275 Alcohol Use and Misuse (3)**

Examination of biological, psychological, and social determinants of alcohol use and misuse. Prevention, early intervention, and treatment approaches also covered. (Lec. 3) Pre: 113.

**300 Quantitative Methods in Psychology (3)**

Basic concepts and techniques of quantification in psychology. Emphasis on application of certain descriptive and inferential statistical tools in the analysis of psychological measurements of behavior. (Lec. 3) Pre: 113, at least one college-level mathematics course, and sophomore standing.

**301 Introduction to Experimental Psychology (4)**

Lectures, demonstrations, and laboratory experiments introduce the student to basic methodological principles and experimental techniques applied in psychological research. (Lec. 3, Lab. 2) Pre: 300.

**305 Field Experience in Psychology (3)**

Direct contact with settings and populations served by psychologists. Emphasis on understanding models and theories in relation to practical problems. Topical sections may include: a) pre-clinical, b) community, c) laboratory, and d) organizational applications. (Practicum) Pre: 113 and permission of instructor. May be repeated for a maximum of 6 credits.

**310 History and Systems of Psychology (3)**

Origins of psychological inquiry and theories of psychology. Transformations of theories and methods of inquiry through the history of our culture including contemporary systems and models of psychological functioning. (Lec. 3/Online) Pre: 113. (L)

**334 Introduction to Clinical Psychology (3)**

Emphasis on scope of the field, functions of the clinical psychologist, methods used, and problems encountered, both scientific and professional. (Lec. 3) Pre: 254.

**335 The Psychology of Social Behavior (3)**

Conceptual and empirical analyses of individual behavior in social contexts; attention to social motivation, attitude development and change, liking, conformity, aggression, altruism. (Lec. 3) Pre: 113 and junior standing or permission of instructor.

**361 Learning (3)**

Learning process in humans and non-humans, focusing on principles and methods. This course features operant-learning and behavior-modification principles and examples from real life. (Lec. 3) Pre: 301 or permission of instructor.

**371 Laboratory in Learning (1)**

Laboratory experiments in learning (primarily animal) designed to parallel course materials in 361. (Lab. 2) Pre: 301, credit or concurrent enrollment in 361, or permission of instructor.

**381 Physiological Psychology (3)**

Physiological mechanisms operative in human behavior. Sensory, neural, endocrine, and response systems as related to sensation, perception, attention, emotions, motivations, and learning. (Lec. 3) Pre: junior standing.

**382 Research Methods in Physiological Psychology (3)**

An introduction to the principles and techniques of experimentation in physiological psychology, such as brain stimulation and lesions, electrophysiology, neuropsychological testing, and pharmacology. (Lab. 6) Pre: 381 and permission of instructor.

**384 Cognitive Psychology (3)**

An examination of contemporary research and theories on mental activities. Topics will include perception, pattern recognition, attention, memory, problem solving, language, consciousness, and artificial intelligence. (Lec. 3) Pre: 113 and 301 or equivalent. In alternate years.

**385 Perception (3)**

Sensory function, development of perception, perception of space, color, sound, and complex events. (Lec. 3) Pre: 113 and 300, or equivalent. In alternate years.

**388 The Psychology of Language (3)**

Study of language processes in light of contemporary theories and research. Topics include speech production, perception, memory, comprehension, language and the brain, language acquisition, reading, language, and thought. (Lec. 3) Pre: junior standing. In alternate years.

**399 (or AAF 399) Introduction to Multicultural Psychology (3)**

Introductory course focusing on multiculturalism as a major paradigm. Emphasizes the meaning of multiculturalism and associated principles, concepts, and sociocultural factors as related to assessment, intervention, and research. (Lec. 3/Online) Pre: 113 or 103.

**405 Psychological Anthropology**

See Anthropology 405.

**430 Intimate Relationships**

See Sociology 430.

**432 Advanced Developmental Psychology (3)**

Major issues in developmental psychology. Emphasis on research in Piaget, Erikson, Bruner, Kagan, and Moss. Includes effects of infant care, sex typing, parental discipline, and developmental aspects of intellectual and perceptual growth. (Lec. 3) Pre: 232.

**434 Psychological Testing (3)**

Measurement procedures employed in the measurement of intelligence, aptitudes, abilities, attitudes, interests, and personality. Focus on psychometric principles associated with the various tests. (Lec. 3) Pre: 300 or equivalent.

**436 Psychotropic Drugs and Therapy**

See Biomedical and Pharmaceutical Sciences 436.

**442 Psychology of Exceptionality (3)**

Survey of the major issues underlying the classification, institutionalization, and treatment of persons with mental, physical, psychological, and educational disabilities. Specific topics include social attitudes toward exceptionalities, past and current legislation, special education services, and transitions into community life and the workplace. (Lec. 3) Service learning. Pre: junior or senior standing.

**460 The Substance-Troubled Person (3)**

Presents theoretical and applied material on alcohol and other mood-altering substances of abuse. Relevant for alcohol and substance abuse counselors, personnel administrators, and other social service workers. (Lec. 3) Offered through the Alan Shawn Feinstein College of Continuing Education.

**464 Humanistic Psychology (3)**

Discussion of humanistic approaches to the understanding and direction of behavior. Emphasis on contemporary writers such as Rogers, Maslow, May, Moustakas. Discussions of phenomenology and existentialism. (Lec. 3) Pre: 235 and junior standing. In alternate years.

**465 Introduction to Crisis Intervention (3)**

Interventions for various types of emergencies including substance abuse and functional or organic disorders. (Lec. 3) Pre: 254 and permission of instructor.

**466 Child Sexual Abuse (3)**

Current theorizing regarding the causes of sexual abuse of children will be presented, as well as the short- and long-term effects of such abuse. Management of problems will be followed, from disclosure through current state-of-the-art practices in treatment. Issues in prevention, court cases, and investigation will be reviewed. (Lec. 3) Pre: senior status and permission of instructor. Not for graduate credit.

**470 Topics in Social Psychology (3)**

Empirical and conceptual approaches to a major topic in contemporary social psychology. Topics will vary from semester to semester. (Seminar) Pre: 113 and 335.

**471 Applied Behavioral Analysis and Remediation (3)**

Study and application of behavioral approaches used to analyze and remediate behavioral problems of children and adults in educational and human service settings and everyday life. (Lec. 3) Pre: 361 or permission of instructor. Offered through the Alan Shawn Feinstein College of Continuing Education only.

**473 Practicum in Behavioral Psychology (3)**

Supervised, on-site field experience in applications of behavioral approaches in an educational or human service setting. (Practicum) Pre: 471 or permission of instructor.

**478 Applications of Psychology (1-3)**

Applications of psychological research and theory to contemporary problems, with an emphasis on scholarly bases. (Seminar) Some topics may be offered online. May be repeated for a maximum of 12 credits.

**479 Topics in Psychology (1-3)**

Central issues in the field of psychology, allowing in-depth study of contemporary or historical topics. (Seminar) Some topics may be offered online. Pre: 113 or permission of instructor. May be repeated with a change in topic for a maximum of 12 credits.

**480 Psychology of Women (3)**

Discussion of psychological research and theories on the psychology of girls and women from a multicultural perspective. Topics include personality theories, gender similarities and differences, biological aspects of sex and gender, cultural images of women, sexuality, relationships, motherhood, work and achievement, physical and mental health. (Lec. 3/Online) Pre: 113 and at least one 200-level psychology course.

**489 Problems in Psychology (3)**

Advanced work in psychology. Course will be conducted as seminar or as supervised individual project. Pre: permission of instructor. May be repeated once.

**499 Psychology Practicum (1–6)**

Individual and group projects applying psychology in clinical or laboratory settings. (Practicum) Pre: permission of instructor. May be repeated for a maximum of 12 credits. No more than 6 credits may be taken in one semester. Not for major credit in psychology. S/U only.

**505 Community Psychology (3)**

Introduction to community psychology; study and change of individual's interaction with community systems; theoretical and empirical models, intervention strategies, and research methods relevant to community psychology. (Lec. 3)

**517 (or STA 517) Small N Designs (3)**

A survey of Small N experimental methodology appropriate for repeated observations on a single unit or individual. Methods include quasi-experimental designs, interrupted time series, and multivariate time series. Applications in applied research, particularly behavioral intervention. (Seminar) Pre: 532 and 533. In alternate years.

**527 Language Study for Teachers of Reading**

See Education 527.

**532 Experimental Design**

See Statistics 532.

**533 Advanced Quantitative Methods in Psychology (3)**

Advanced quantitative methods applied to psychology. Survey of methods such as multiple regression, multivariate analysis of variance, discriminant analysis, canonical correlation, principal component analysis, and factor analysis. Applications involve practice with computer programs. (Lec. 2, Lab. 2) Pre: 532.

**540 (or EDC 540) Learning Disabilities: Assessment and Intervention (3)**

Applications of early screening batteries; remedial programs for various disabilities, including behavioral programs and methods for older children and adolescents. Emphasis on pragmatic application of skills for detection and treatment. (Lec. 3) Pre: permission of instructor. May be repeated for a maximum of 6 credits.

**544 (or EDC 544) Reading Acquisition and Reading Disability: Research and Implications for Practice (3)**

Examination of research on the language, cognitive, and reading characteristics of children who successfully learn to read and of those who encounter difficulty. Additional focus on the implications and use of the research for assessment and instruction. (Lec. 3) Pre: graduate standing or permission of instructor.

**550 Behavior Analysis and Change (3)**

Introduction to the principles of operant conditioning with emphasis on the use of these principles in

the analysis and change of behavior in real-life settings such as schools and families. (Lec. 3)

**554 Alternative Therapies (3)**

Theory and practice of a variety of individual and group techniques that can be integrated into one's present style of helping. (Lec. 2, Lab. 2) Pre: professional and/or graduate standing.

**581 Psychological Aspects of a Healthy Lifestyle**

See Kinesiology 581.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**600 Multicultural Issues in Psychology: Theory, Research, and Practice (3)**

Focus is on general issues and concepts relevant to a psychology that is concerned with multicultural populations as sources of enrichment for theory, research, and practice. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Seminar) Pre: graduate standing.

**601 Physiological Psychology (3)**

An advanced consideration of physiological research on neural, endocrine, and response systems as they relate to attention, motivation, emotion, memory, and psychological disorders. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 2, Lab. 2)

**602 Learning and Motivation (3)**

Empirical and theoretical analysis of the basic principles of acquisition and loss of habits. Topically organized to deal with respondent and operant conditioning, and their relationship to reinforcement and motivation. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3) Pre: undergraduate learning course.

**603 Development (3)**

Theoretical, methodological, and applied issues in life span development, including cognitive, perceptual, psychomotor, affective, and social development. Topically organized. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**604 Cognitive Psychology (3)**

A survey of the theoretical and methodological issues in human cognition. Topics include pattern recognition, attention, memory, language, problem solving. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**605 Personality (3)**

Reading of primary source materials from major personality theorists relevant to a particular topical emphasis. Application and comparative evaluation

of the theories studied. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**606 Social Psychology (3)**

Intensive exploration of the methods, theory, and database of contemporary social psychology focusing on salient issues that clarify significant topics in this area. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**607 Advanced Psychopathology (3)**

A review of the multicultural, theoretical, clinical, and empirical literature related to the development, classification, and diagnosis of psychopathology. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**608 Theories and Systems (3)**

An in-depth analysis of the origin and logical structure of major systematic approaches to psychology. Emphasis on significant recurrent controversies. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3) Pre: graduate standing.

**609 Perception (3)**

A survey of topics in the psychology of perception, including sensory function; psychophysical models, measurement, and scaling; visual perception; and methods for analyzing perceptually guided behavior. Counts as a "core course" for graduate study in psychology and includes an historical perspective. (Lec. 3)

**610 (or STA 610) Parsimony Methods (3)**

Multivariate procedures designed to reduce the dimensionality and help in the interpretation of complex data sets. Methods include principal components analysis, common factor analysis, and image analysis. Related methods: cluster analysis and multidimensional scaling. Applications involve the use of existing computer programs. (Lec. 3) Pre: 533 or STA 541 or equivalent. In alternate years.

**611 Methods of Psychological Research and Experimental Design (3)**

Provides the student of psychology with a knowledge of research methodology and the techniques of experimental designs. It prepares for the development of thesis problems of graduate students in psychology and related disciplines. (Lec. 3) Pre: 532 and 533.

**612 (or STA 612) Structural Modeling (3)**

Theory and methodology of path analysis with latent variables. Discussion of "causation" and correlation, confirmatory factor analysis, measurement and structural equation models. Practical applications using current computer programs (e.g. EQS). (Lec. 3) Pre: 533 or 610.

**613 Qualitative Research and Analysis in Psychology (3)**

Introduction to qualitative methods and analyses with a focus on interviews, focus groups, and visual data methods. Counts as a "core" methodology course for graduate study in psychology and includes historical and contemporary perspectives in psychology. (Lec. 2, Lab. 2) In alternate years. Pre: graduate standing.

**614 Evaluation Research Seminar (3)**

Introduction to application of research and consultation methods to program and policy evaluation; emphasizes quantitative methods and utilization focus. Assumes background in social science research methods. (Seminar) Pre: graduate standing.

**615 Collaborative Research in Psychology (0-3)**

Collaborative approaches to methods of psychological inquiry. Special emphasis on topics that can involve students at varying levels of research skill. Format includes weekly seminars and colloquia. (Seminar) May be repeated. S/U credit.

**625 Seminar: Social Psychology (3)**

Emphasis on a major area in contemporary social psychology. Empirical studies analyzed for their relevance to theoretical and applied issues: students will design an original investigation. (Seminar) Pre: graduate standing or permission of instructor. May be repeated for a maximum of 12 credits with different topic.

**626 Psychology of Sex and Gender (3)**

Examines theory and research relevant to sex and gender from social, psychological, multicultural, and interdisciplinary perspectives. Focuses on topics relevant to men, women, transgendered people, transsexuals, and intersexuals. In alternate years.

**635 Transtheoretical Model Applied to Health Psychology (3)**

The transtheoretical model is an influential comprehensive model of behavior change that has been extensively employed in health psychology. Applications include smoking cessation, exercise, diet, dress, and medication adherence. (Seminar) Pre: graduate standing.

**641 Introduction to Psychotherapy (3)**

An analysis of the major systems of psychotherapy. Developing an integrative, eclectic model through identifying the processes of change that are the core of effective therapy. (Lec. 3)

**642 Introduction to Psychotherapy Practice (3)**

Instruction and practice in the basic interviewing skills and clinical techniques necessary for practicum courses in psychotherapy. Seminar format with some lecture material, role playing, structured experiential exercises, case presentation, and discussion and videotape illustration. (Seminar) Pre: 641. S/U credit.

**644 Family Therapy (3)**

Introduction to theories and techniques of family assessment and family therapy. Seminar format with videotape illustrations, case presentation and discussion, lecture, and selected experiential exercises. (Lec. 3) Pre: permission of instructor. Not offered every year.

**647 Child Therapy (3)**

Seminar discusses issues, techniques, and research related to behavior changes in children and their families. Aspects of therapy, the role of behavioral approaches, and the participation of parents will be explored. Direct, supervised experience is included in this course. (Lec. 3) Pre: participation in the Psychological Consultation Center.

**660 Clinical Assessment and Decision Making (3)**

Covers basic principles and methods for decreasing error and increasing accuracy in applied clinical work, such as clinical versus actuarial judgment and use of base rates. (Lec. 3) Pre: course in psychological testing.

**661 Psychological Services I: Administration and Interpretation of Cognitive Tests (3)**

Instruction and practice in administration and interpretation of contemporary cognitive tests; individual intelligence tests of both general and specific abilities. Rationale, research evidence, clinical applications. (Lec. 3) Pre: 660.

**662 Psychological Services II: Administration and Interpretation of Personality Tests (3)**

Instruction and practice in the administration and interpretation of instruments used in the assessment of personality. Emphasis on tests such as the MMPI, Rorschach, TAT. Rationale, research evidence, and clinical application. (Lec. 2, Lab. 2) Pre: 661.

**663 Child and Adolescent Personality Assessment and Intervention (3)**

Psychological assessment and intervention with children and adolescents, focused on personality functioning, behavioral, social, and emotional problems. Emphasis on assessment theory and methods as linked to empirically supported intervention approaches. (Lec. 2, Lab. 2) Pre: graduate standing in psychology and 665, 661 or permission of instructor.

**665 Developmental Psychopathology (3)**

Child and adolescent psychological disorders are conceptualized through a developmental perspective, and contemporary research on etiology, diagnosis, course, prognosis, and treatment/management is examined. (Lec. 3) Pre: 603 or equivalent.

**666 Seminar: Ethical and Legal Issues in Psychology (3)**

Ethical, legal, and professional issues as they relate to the provision of psychological services and psychological research. Emphasis is on the study of ethical issues and the examination of the development of

professional standards as they relate to the areas of clinical psychology practice, school psychology practice, and applied research practice. (Seminar)

**668 School Psychological Consultation (3)**

Historical and contemporary perspectives on consultation are reviewed. Theory, research, and practice are discussed from various consultation models including mental-health, behavioral, and organizational. The focus is on content and process of consultation in various clinical and educational settings. (Lec. 3) Pre: 661 and 663 or equivalent.

**670 Field Experience in Psychological Services (1-12)**

Practicum placements and internships are available in a variety of agencies, clinical and school settings, under supervision. (Practicum) S/U credit.

**672 Individual Clinical Practicum (3-9)**

Introductory experience in dealing with clinical problems in a variety of clinical settings under supervision. (Practicum) Pre: 661, 662. May be repeated for a maximum of 9 credits. S/U credit.

**674 Clinical Practices: Therapy (1-12)**

Specialized techniques of clinical interviewing, counseling, and psychotherapy. Critical discussions of student's own supervised therapy sessions. (Practicum) Pre: 607 and 641. May be repeated for a maximum of 12 credits.

**676 Neurological Correlates of Psychopathology (3)**

Functioning and physiology of the central nervous system with particular attention to determining how nervous-system disruption and injury are manifested in behavioral disorder. Techniques used to evaluate and interpret neuropsychological functioning. (Lec. 2, Lab. 2) Pre: permission of instructor. Not offered every year.

**681 Special Problems in School Psychology (3-9)**

Role of the psychologist in the school setting. Several theoretical and practical issues concerned with the value of psychological theory, administrative philosophy, and school organization are explored. (Seminar) May be repeated for a maximum of 9 credits.

**683 (or EDC 683) Psychology of the Exceptional Child (3)**

Social, psychological, and educational factors that constitute the matrix of concerns with the exceptional individual in the school and community. Recent innovations in public and private education and habilitation. Research issues and legislation discussed evolve into student studies. (Lec. 3)

**687 (or EDC 687) Seminar: Topics in the Psychology of the Exceptional Individual (3)**

Survey of topics and current issues in the treatment, needs, and understanding of the psychology of specific exceptionalities. (Seminar) May be repeated for a maximum of 9 credits with different topics.

**688 Developmental Neuropsychology Seminar (3)**  
 Conceptual overview emphasizing changing relationships between human central nervous system and behavior from conception through adolescence. Normal and abnormal neurodevelopment, theoretical principles, assessment and intervention issues, and selected research methodologies. (Seminar) Pre: 601 or equivalent.

**690 Seminar: Contemporary Issues in Psychology (3-12)**

Recent developments and current issues. Rigorous exploration of experimental, applied, and theoretical literature. (Seminar) May be repeated for a maximum of 12 credits.

**692, 693 Directed Readings and Research Problems (3-12 each)**

Directed readings and advanced research work under the supervision of a faculty member arranged to suit the individual requirements of the students. (Independent Study)

**695 Seminar: Teaching Psychology (3)**

Primarily a seminar in the teaching of psychology at the undergraduate level. Includes a consideration of general issues in college teaching, preparation of a course proposal, and sample presentation. (Seminar)

**696 Practicum: Teaching Psychology (1-3)**

Practicum for students teaching a college-level psychology course. Supervision of course preparation, presentation, and evaluation. (Practicum) Pre: 695 or permission of the department. May be repeated for a total of 6 credits with permission of the department. S/U credit.

**699 Doctoral Dissertation Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

## Public Relations (PRS)

*Coordinators:* Associate Professor Derbyshire, Communication Studies, and Professor Levin, Journalism

**340 (or JOR 340) Public Relations (3)**

Principles and procedures in public relations: emphasis on role of the public relations practitioner as a specialist in communication; analysis of publications produced as a part of public relations. (Lec. 2, Lab. 2) Pre: junior standing and JOR 220 with a grade of C or better.

**441 (or JOR 441) Public Relations Practices (3)**

Practical application of traditional PR methods in solving problems in a variety of markets. Explores fundamental agency operations, client-agency relationships. Combines practical experience with

individual projects, programs, and campaigns. (Practicum) Pre: 340. Not for graduate credit.

**491 Public Relations Internship (3 or 6)**

Supervised experience in public relations. Requires a minimum of 120 hours (3 credits) or 240 hours (6 credits). Weekly class meeting. May be repeated; maximum of 6 credits allowed toward graduation. Pre: public relations majors only; 340, 441, COM 306, and JOR 341. Permission of instructor and application required. Not for graduate credit.

## Religious Studies (RLS)

*Chairperson:* Professor Zeyl (Philosophy)

**111 Judaism, Christianity, and Islam (3)**

Comparative study of the teachings, the histories, and the practices of the three religions of Abraham; emphasis on their teachings. (Lec. 3) (L) [D]

**125 Biblical Thought (3)**

Selected portions of the Old and New Testaments with emphasis on their positive contribution to the philosophy of the Jewish and Christian religions. (Lec. 3) (L)

**126 The Development of Christian Thought (3)**

History of religious and philosophical ideas, development of the teachings of Christianity. Emphasis to meet needs and interests of students. Historical nature of material suitable for liberal education without regard to student's religious affiliation. (Lec. 3) (L)

**131 Introduction to Asian Philosophies and Religions (3)**

Introductory study of the main philosophical and religious ideas in Asia, with emphasis on Hinduism, Buddhism, Confucianism, and Taoism. (FC) or (L)

**151 The Jewish Experience (3)**

Examines Judaism's history, customs, culture, and beliefs. (Lec. 3)

## Resource Development Education (RDE)

*Coordinator:* Associate Professor Mallilo

**486 Internship in Agricultural and Extension Education (1-6)**

Provides experiential learning opportunities related to agricultural education and/or Cooperative Extension education. (Practicum) May be repeated for a maximum of 6 credits. Not for graduate credit.

## Resource Economics (REN)

See Environmental Economics (EEC).

## Russian (RUS)

*Section Head:* Professor Aronian

**101 Beginning Russian I (3)**

Introduction to fundamentals of grammar; exercises in speaking, reading, and writing. Emphasis on pronunciation, intonation, and aural comprehension of contemporary spoken Russian. Language laboratory required. (Lec. 3) Pre: no prior Russian is required. Will not count toward the language requirement if the student has studied Russian for more than one year within the last six years. (FC) [D]

**102 Beginning Russian II (3)**

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

**103 Intermediate Russian I (3)**

Completion of fundamentals of grammar; exercises in speaking and writing, reading of contemporary texts; emphasis on distinction between spoken and written language. Language laboratory required. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

**104 Intermediate Russian II (3)**

Continuation of 103. Students enrolling in this course should have taken 103 or equivalent. (Lec. 3) (FC) [D]

**205, 206 Advanced Russian (3 each)**

Oral reports, written compositions, and classroom discussion based on readings in Russian history and culture, literature, and current Soviet affairs. Listening projects in laboratory. Students enrolling in this course should have taken 104 or equivalent. (Lec. 3) (FC) [D]

**325, 326 Introduction to Literary Studies in Russian (3 each)**

Techniques of literary criticism applied to Russian literary works in various genres. Listening projects in laboratory emphasizing poetry and drama. (Lec. 3) Pre: credit or concurrent enrollment in 205 and 206.

**391, 392 Masterpieces of Russian Literature (3 each)**

Prose, poetry, and drama from late 18th through 20th centuries in translation. Emphasis on literary movements through textual analysis. Authors range from Pushkin to Pasternak, including Dostoevsky and Tolstoy. (Lec. 3) (A) [D]

**460, 461 The Russian Novel (3 each)**

Major developments in themes and techniques, significant shifts of mode. Influences on the emergence of the novel in Russia. Laboratory required. (Lec. 3) Pre: credit or concurrent enrollment in 205 and 206.

**497, 498 Directed Study (3 each)**

For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by member and approval of section head.

**Service Learning**

The Feinstein Center for Service Learning recognizes the following courses as having a service learning component. Service learning is an alternative way of both teaching and learning about concepts or theories. All first-year students are introduced to service learning through their required URI 101, Traditions and Transformation course. The purpose of these courses is to help students make meaningful connections between academic course work and societal issues and needs within the community. The service work is profoundly connected to and enhanced by the specific course of study. Depending on the instructor, the service learning component may be an optional or required part of the course content.

**African and African-American Studies (AAF)**

380 African-Americans in the Legal System

**Community Planning (CPL)**

510 Community Planning and Political and Social Change

523 Planning Theory

**Community Service (CSV)**

101 Introduction to Cultural Competence

102 Cultural Competence Experiences

301 Course-Cased Community Service

302 Community Service at URI

303 Community Service in the Community

**Education (EDC)**

424 Teaching of Reading (service is optional)

429 Emergent Literacy (service is optional)

456 Mathematics Methods in Elementary Teaching

**English Language Studies (ELS)**

200 English Language Fellows Training Course

**Human Development and Family Studies (HDF)**

303 Early Childhood Practicum

380 Field Experiences in Community Agencies

381 Field Experience Seminar

434 Children and Families in Poverty

560 Group Procedures and Leadership

562 Organization Development in Human Services

583, 584 Master's Internship

**Human Science and Services (HSS)**

140 Ways of Knowing in Human Science and Services I

141 Ways of Knowing in Human Science and Services II

530 Multidisciplinary Health Seminars for the Elderly

**Landscape Architecture (LAR)**

244 Basic Landscape Architecture Design

444 Landscape Architecture Studio III: Sustainable Design (Professor Green)

445 Landscape Architecture Studio IV (Professor Green)

**Music (MUS)**

119 Introduction to the Music Profession

**Natural Resources Science (NRS)**

309 Wildlife Management Techniques

Laboratory

**Nursing (NUR)**

324 Medical-Surgical Nursing Practicum

344 Practicum in Childbearing and Reproductive Health Nursing

346 Practicum in Care of Clients and Families

434 Practicum in Nursing of Children

444 Practicum in Community Health Nursing

532 Practicum in Primary Health Care Nursing I

534 Practicum in Primary Health Care Nursing II

590 Directed Study and Practice in Advanced Clinical

Nursing

**Nutrition and Food Sciences Science (NFS)**

394 Nutrition in the Life Cycle I

395 Nutrition in the Life Cycle II

**Plant Sciences (PLS)**

390 Irrigation Technology

**Political Science (PSC)**

485 Children, Community, and Human Rights

487 Rebuilding Our Communities: Theory and Practice

**Psychology (PSY)**

442 Psychology of Exceptionality

**Sociology (SOC)**

497 Field Experience in Sociology

**Women's Studies**

150 Introduction to Women's Studies (some sections)

**Writing (WRT)**

304 Writing for Community Service

*In addition to the courses listed above, specific topics in other courses and some temporary courses may also carry the Service Learning designation.*

**Sociology (SOC)**

*Chairperson: Professor Loy*

**100 General Sociology (3)**

Introductory description and analysis of the structure and dynamics of human society. Social norms, groups, intergroup relations, social change, stratification, and institutions. (Lec. 3) (S) [D]

**204 Social Psychology (3)**

Examination of the social basis of self and behavior; emphasis on identity, motivation, attitude, social role, and the symbolic in social life. (Lec. 3)

**212 Families in Society (3)**

Examines the role of families in maintaining and changing society. Emphasis on demographic and historical changes in family life, the diversity of family structures, and connections between the family and the political economy. (Lec. 3) (S) [D]

**214 Urban Sociology (3)**

Introduction to major theories of urbanization; examination of the social, political, and cultural aspects of urbanization and contemporary urban problems such as the population explosion, pollution, class inequality and alienation; emphasis on a global and comparative cross-national perspective. (Lec. 3)

**216 Deviant Behavior (3)**

Examination and analysis of major theories of deviant behavior. Application of these theories to particular types of deviant behavior. (Lec. 3)

**224 Health, Illness, and Medical Care (3)**

Introduction to social factors in the occurrence, distribution, and treatment of illness in society; critical analysis of the social organization of medicine in contemporary American society. (Lec. 3)

**230 Crime and Delinquency (3)**

Survey of the extent, distribution, trends, and costs of delinquency and crime in the United States; examination of selected types of crime and delinquency; policy implications. (Lec. 3) (S) [D]

**238 Population Problems (3)**

Problems in the growth, decline, and composition of populations. Effects of fertility, mortality, migration. Special attention to American society. (Lec. 3) (S)

**240 (or AAF 240) Race and Ethnic Relations (3)**

Relations among the various ethnic, religious, racial, and political minorities and majorities, with special reference to the United States. (Lec. 3) (S) [D] Professor Cunnigen's section is writing intensive [WI].

**242 Sex and Gender (3)**

Current research exploring issues of sex and gender. Socialization, gender role playing, and personal relationships. Institutional costs of sexism. Prospects for human liberation. (Lec. 3) (S) [D]

**274 Criminal Justice System**

See Political Science 274. (S) [D]

**300 Topics in Sociology (3)**

Critical study of selected topics. Subject will vary according to the expertise and availability of instructors. (Lec. 3) Pre: one 100- or 200-level sociology course. May be repeated for credit with different topic.

**301 Sociological Research Methods (3)**

Scientific method in sociological research; emphasis on the development of the ability to construct and evaluate data-based arguments; topics include the nature of evidence, research design, principles and techniques of sampling, data collection and interpretation. (Lec. 3) Pre: 100. Open only to sociology majors.

**302 Topics in Sociological Research (3)**

An extension of 301 in which students apply principles and techniques in an original research experi-

ence. Recommended for students planning to attend graduate or professional school. (Lec. 3) Pre: 301 and permission of the instructor.

**306 Development of Human Societies (3)**

Examines social change from an historical perspective in which whole societies are the unit of analysis. Focuses on the role of technology, political economy, and globalization. (Lec. 3) Pre: 100 or 214.

**318 Social Movements and Social Change (3)**

Analysis of theoretical perspectives, directions, patterns, and consequences of social change in relationship to social movements. Case studies of social movements with special emphasis on the civil rights movement. (Lec. 3) Pre: 6 credits in sociology.

**320 Organizations (3)**

Explores both formal and informal aspects of organizations from a sociological perspective. Topics include bureaucracy and its consequences; post-bureaucratic and postmodern forms of organization; modern and contemporary theories of organizing and organizations. (Lec. 3) Pre: One 100- or 200-level sociology course. Offered in the spring of even-numbered years.

**322 The Arts and Social Order (3)**

Consideration of the relationship between the arts and socially established meanings, social structure, and societal myths, with special attention to consonant and dissonant functions of the arts for social cohesion. (Lec. 3) Pre: 6 credits in sociology or permission of instructor.

**326 Madness and Society (3)**

Phenomenon of mental disorder considered in light of recent research findings and developments in sociological theory. Mental disorder discussed as an outgrowth of societal processes. (Lec. 3) Pre: 6 credits in sociology or permission of instructor.

**330 Police in Democratic Societies (3)**

Examines the development of policing, its structures and functions, police discretion and accountability, and current innovations. Focus on the United States with comparisons to other countries. (Lec. 3)

**331 Punishment and Corrections (3)**

An overview and analysis of societal reactions to crime with emphasis on American society. Purposes of criminal sanctions, probation and parole, jails and prisons, capital punishment and its effect. (Lec. 3) Pre: one 100- or 200-level sociology course.

**336 (or AAF 336) Social Inequality (3)**

Dimensions and dynamics of inequality in society; concepts of class and status; processes of social mobility. (Lec. 3) Pre: one 100- or 200-level sociology course. Professor Cunningham's section is writing intensive [WI].

**350 Work and Family Life (3)**

Linkages between economic and family institutions. Effects of work on family and of family on work.

Historical development of the linkages. Contemporary effects due to men's decreasing and women's increasing labor force participation. (Lec. 3) Pre: 100 or 212 or HDF 230.

**370 Theories of Crime and Delinquency (3)**

Historical development of criminological theory; examination of the major sociological and social psychological theories of crime, criminality, and delinquency; evaluation of competing theories. (Lec. 3)

**375 Race, Crime, and Criminal Justice (3)**

Examination of the involvement of selected racial and ethnic groups in crime, both as victims and offenders; disparity and discrimination in the criminal justice system. (Lec. 3) Pre: 230 and PSC 274 (or SOC 274).

**401 History of Sociological Thought (3)**

Examination of the basic questions and issues that have been the focus of sociological thought; critical analysis of theoretical sociology with an emphasis on the contributions of sociological theory to understanding the structures and problems of modern society. (Lec. 3) Pre: 100 and 6 credits in sociology. Open only to sociology majors.

**408 Individual Life and Social Order (3)**

Sociology of the individual as a creative participant in social order. Emphasis on cultural symbolism in the development of personal idiom, social structure, and social change. (Lec. 3) Pre: 9 credits in sociology or permission of instructor.

**413 Gender Inequality (3)**

Development of gender inequality. Critique of various theories explaining inequality. Sociological interpretation of theories of gender. (Seminar) Pre: 242 or permission of instructor. In alternate years.

**420 Family Violence (3)**

Surveys the extent, distribution, trends, and costs of physical, emotional, and economic forms of family violence at individual, dyadic, and cultural levels. (Seminar) Pre: 100. Approved for graduate credit.

**426 (or PSC 426) Issues in Corrections (3)**

Justifications for punishment and corrections; historical development; intensive survey of current research on deterrence, effectiveness of treatment, prison, violence, and other issues. (Seminar) Pre: 331. In alternate years.

**428 (or AAF 428) Institutional Racism (3)**

Consideration of varying models of race and ethnic relations; examination of recent research on issues such as residential segregation, school desegregation, affirmative action, and racial disorders; comparisons of United States with other societies. (Seminar) Pre: one 300-level sociology course or permission of instructor. In alternate years.

**430 (or PSY 430) Intimate Relationships (3)**

Examination of the effects of cultural, social, and psychological processes on the development, main-

tenance, and dissolution of intimate relationships. Emphasis on friendship patterns, dating and marital relationships, intimacy in nontraditional relationships. Emphasis on research. (Lec. 3) Pre: any 100- or 200-level course in sociology or PSY 113 or permission of instructor. Not for graduate credit.

**432 (or LRS 432) Work, Employment, and Society (3)**

Explores the workplace and employment relations from a sociological perspective. Topics include work systems, worker alienation and organization, occupational identity, and the impacts of immigration, feminization, and globalization on the workplace. (Lec. 3) Pre: 100 or permission of the instructor. Offered in the spring of odd-numbered years.

**437 Law and Families in the United States**

See Human Development and Family Studies 437.

**438 Aging in Society (3)**

Analysis of the use of age in assigning roles, age changes over the life course, and the implications of demographic changes for societies. Emphasis upon theories of aging, the status and power of the aged, and relations between age groups. (Lec. 3) Pre: one 300-level course in sociology or permission of instructor.

**444 The Sociology of Religion (3)**

Sociological theory and research in the analysis of interrelationships among religious culture, secular culture, the social structure of religious groups, and general social structure. (Lec. 3) Pre: one 100- or 200-level sociology course.

**446 Sociology of Knowledge (3)**

Theories and research on the social bases of ideas. Emphasis on the works of Durkheim, Mannheim, and Marx and their influences on "common sense" interpretations of social life. (Seminar) Pre: one 100- or 200-level sociology course.

**452 Class and Power (3)**

Class structures and patterns of power in advanced societies; comparisons of inequality in capitalist and socialist societies; theories of the relation between class and power; class consciousness, conflict, and accommodation. (Lec. 3) Pre: 6 credits in sociology. In alternate years.

**476 (or PSC 476) Policy Issues in Criminal Justice (3)**

Examination of current and proposed criminal justice policies in light of social science theory and research, including capital punishment, community policing, gun control, intermediate sanctions, legalization of drugs, mandatory sentencing, privatization of prisons, restorative justice. (Seminar) Pre: 274 (or PSC 274).

**495 Senior Seminar in Sociology (3)**

Critical examination of selected topics in sociology. Particular topics for examination will be selected by

the course instructor. Required for students in the B.A. program in sociology. (Seminar) Pre: senior standing; open only to sociology majors. Not for graduate credit.

#### **497 Field Experience in Sociology (3–6)**

Field experience in an approved government agency or nonprofit organization; practice in applying sociological concepts and methods to the analysis of problems faced by the agency and/or its clients, exploration of career opportunities. (Practicum) Service learning. Pre: junior or senior standing and 6 credits in sociology beyond 100. May be taken for 3 or 6 credits. A maximum of 6 credits may be earned. Not for graduate credit. Open only to sociology majors or with permission of instructor.

#### **498, 499 Independent Study (3 each)**

Areas of special research not covered in other courses. May be taken as honors courses. (Independent Study) Pre: one 300-level sociology course and permission of instructor.

#### **505 Public Program Evaluation**

See Political Science 505.

### **Spanish (SPA)**

*Section Head:* Professor Gitlitz

#### **101 Beginning Spanish I (3)**

Introduction to Spanish for beginners. (Lec. 3) Pre: no prior Spanish is required. Will not count toward the language requirement if the student has studied Spanish for more than one year within the last six years. (FC) [D]

#### **102 Beginning Spanish II (3)**

Continuation of 101. Students enrolling in this course should have taken 101 or equivalent. (Lec. 3) (FC) [D]

#### **103 Intermediate Spanish I (3)**

Reading and discussion of representative authors, grammar review, and continued practice in language skills to broaden understanding of Hispanic culture. Students enrolling in this course should have taken 102 or equivalent. (Lec. 3) (FC) [D]

#### **104 Intermediate Spanish II (3)**

Continuation of 103. Students enrolling in this course should have taken 103 or equivalent. (Lec. 3) (FC) [D]

#### **111 Accelerated Elementary Spanish (6)**

Accelerated elementary Spanish equivalent to 101 and 102. Develops basic communication skills in Spanish. Explores the products, practices, and perspectives of Hispanic culture. (Lec. 6) (FC) [D]

#### **113 Accelerated Intermediate Spanish (6)**

Accelerated intermediate Spanish equivalent to 103 and 104. Develops intermediate communication skills in Spanish. Explores the products, practices,

and perspectives of Hispanic culture. (Lec. 6) Pre: 102 or 111 or permission of instructor. (FC) [D]

#### **205 Spanish Language and Style I (3)**

Development and refinement of all Spanish language skills, with emphasis on writing, through structured practice using Hispanic cultural and literary materials. Students enrolling in this course should have taken 104 or equivalent. (Lec. 3) (FC) [D]

#### **206 Spanish Language and Style II (3)**

Continuation of 205. Students enrolling in this course should have taken 205 or equivalent. (Lec. 3) (FC) [D]

#### **207 Oral Expression in Spanish (3)**

Development of oral skills in Spanish through discussion, interpreting, and reports on topics of personal, practical, or cultural interest. Students enrolling in this course should have taken 205 or equivalent. (Lec. 3). May be taken concurrently with 205. (FC) [D]

#### **210 Spanish for Heritage Speakers (3)**

Fundamentals of Spanish grammar, spelling, and writing for heritage speakers with native speaker background who have not had academic training in Spanish. (Lec. 3) Offered every semester. (FC) [D]

#### **305 Early Spanish-American Literature and Culture (3)**

Study of the early development of Spanish-American culture through its literature, from Conquest to Independence. (Lec. 3) Pre: 206 or permission of instructor.

#### **306 Modern Spanish-American Literature and Culture (3)**

Significant figures and developments in literature, the arts, and society, from Independence to the present. (Lec. 3) Pre: 206 or permission of instructor.

#### **307 Hispanic Culture Through the 17th Century (3)**

Significant contributions in literature and the arts, from the unique period of coexistence of Christians, Jews, and Muslims through the Golden Age of the 16th and 17th centuries. (Lec. 3) Pre: 206.

#### **308 Literature and Culture of Modern Spain (3)**

Major figures and developments in Spanish literature, the arts, and society from the 18th century to the present. (Lec. 3) Pre: 206 or permission of instructor.

#### **310 Field Workshop (1–6)**

Cultural visit to Spain or Hispanic America. Significant monuments and places of interest to the student of literature and civilization will be studied. Lectures supplemented by assigned readings. (Workshop) Pre: 104 or permission of instructor.

#### **312 Advanced Spanish (3)**

Problematic aspects of Spanish grammar; proper syntax and word usage in speaking, translation, and

writing at sophisticated levels; correct reproduction of sounds and intonation patterns. (Lec. 3) Pre: 206 or permission of instructor.

#### **313 Introduction to Spanish Linguistics (3)**

Introduction to Spanish linguistics with focus on what human languages are and how they are used. Analysis of Spanish phonetics, phonology, morphology, and syntax, along with issues of language variation and bilingualism in Spanish-speaking communities. (Lec. 3) Pre: 312.

#### **315 Practicum in Community Work (3)**

Practical application of Spanish in a community agency, school, or business. Individual project developed by student under guidance of a Spanish faculty member. Requires a minimum of 120 hours. (Practicum) Pre: 206 and permission of instructor.

#### **316, 317 Spanish Internship Abroad (3–6)**

Supervised work experience in Spanish-speaking country for advanced language students. (Independent Study) Pre: 321. For credit for the B.A. in Spanish only for students also completing a B.S. in engineering.

#### **320 Critical Studies in Spanish Cinema (3)**

Study of major Spanish film genres and of prominent Spanish film directors. Emphasis will vary. Course taught in English. Students counting the course for a major or minor in Spanish are required to do all written work in Spanish and must have credit for 206. (Lec. 3) FLM 101 or equivalent recommended. May be repeated with different topics for a total of 6 credits. (A) (FC) [D]

#### **321 Spanish for Business and Technology (3)**

Study of the concepts and terminology of the Spanish language common to the realm of international business and engineering. (Lec. 3) Pre: 206 or equivalent. For credit for the B.A. in Spanish only for students also completing a B.S. in engineering.

#### **325 Introduction to Literary Genres (3)**

Presentation of the novel, poetry, drama, and essay as literary genres. Textual commentary and methods of criticism. (Lec. 3) Pre: 206 or permission of instructor. Required for Spanish majors. (A)

#### **391, 392 Spanish Literature in Translation (3 each)**

Reading and analysis in English of Spain's most significant contributions to world literature: poetry, novel, drama, essay. Works through the 17th century in the first semester; those of the 19th and 20th in the second. (Lec. 3) Not for major credit in Spanish.

#### **393 Modern Hispanic-American Literature in Translation (3)**

Introduction to the development of Latin-American literature in the 20th century and an examination of how the literary artifact has reflected the major social and political changes of the region. (Lec. 3) Not for major credit in Spanish.

**401 Oral and Dramatic Presentation of Hispanic Literature (3)**

Practice in effective oral communication in Spanish and appreciation of Hispanic literature through analysis and class presentation of drama, poetry, and prose. (Lec. 3) Pre: 325 or permission of instructor.

**413 Spanish Sociolinguistics and Pragmatics (3)**

Study of Spanish sociolinguistics and pragmatics. Analysis of speech variants or dialects and the factors that determine them. Examination of the use of language in context and the ways in which speakers interpret discourse. (Lec. 3) Pre: any 300-level SPA course or permission of the instructor.

**421 Business Spanish (3)**

Study of concepts and terminology in the Spanish-speaking business world. (Lec. 3) Pre: credit or concurrent enrollment in a 300-level Spanish course. Not for graduate credit in Spanish.

**430 Castilian Prose of the 16th and 17th Centuries (3)**

Literary significance of the Renaissance and Baroque periods and an analysis and critical examination of the prose works of the principal writers of this Golden Age of Castilian Literature. (Lec. 3) Pre: 325 or permission of instructor.

**431 Drama and Poetry of the 16th and 17th Centuries (3)**

Spanish poetry and drama from the early Renaissance through the Baroque. (Lec. 3) Pre: 325 or permission of instructor.

**450 Romanticism and Realism (3)**

Nineteenth-century Spanish literature of the romantic and realist movements. Examples of drama, poetry, and prose as they reflect evolving concerns of the modern writer and society. (Lec. 3) Pre: 325 or permission of instructor.

**471 Topics in Latin American Literature and Culture (3)**

Latin American topics or author not emphasized in other courses. (Seminar) Pre: 325 or permission of instructor. May be repeated with a change in topic for a maximum of 6 credits.

**472 Topics in Hispanic Literature (3)**

Topics in Hispanic linguistics not emphasized in other courses. (Seminar) Pre: 325 or permission of instructor. May be repeated with a change in topic for a maximum of 6 credits.

**473 Topics in Spanish Literature and Culture (3)**

Spanish topics or authors not emphasized in other courses. (Seminar) Pre: 325 or permission of instructor. May be repeated with a change in topic for a maximum of 6 credits.

**481 Don Quijote (3)**

Life and times of Miguel de Cervantes Saavedra and the reading and critical interpretation of his work, *El ingenioso hildalgo Don Quijote de la Mancha*. (Lec. 3) Pre: 325 or permission of instructor.

**485 Modern Spanish Narrative (3)**

Representative narrative works by Spain's major authors from the Generation of 1898 to the present. (Lec. 3) Pre: 325 or permission of instructor.

**486 Modern Spanish Poetry and Drama (3)**

Selected poetry and plays from the 19th century through the present. (Lec. 3) Pre: 325 or permission of instructor.

**488 Spanish-American Poetry and Drama (3)**

Traces the development of poetic expression and drama from the 17th century to modern times as a reflection of the evolution of Spanish-American identity. (Lec. 3) Pre: 325 or permission of instructor.

**489 The Spanish-American Narrative (3)**

Traces the development of fictional prose in Spanish America from the colonial period to modern times as a reflection of cultural and societal changes. (Lec. 3) Pre: 325 or permission of instructor.

**497, 498 Directed Study (1-3 each)**

For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: 325, acceptance of project by faculty member, and approval of section head.

**510 Contemporary Spanish Workshop (3-6)**

New developments in all areas of Hispanic studies including pedagogical matters and classroom techniques. (Workshop) Pre: graduate standing or permission of instructor.

**511 The Spanish of the Americas (3)**

Examines linguistic dialect variation within Spanish and the factors that determine it. Individual and social bilingualism and its educational implications are also discussed. (Seminar) Pre: graduate standing or permission of instructor.

**513 Bilingualism in Spanish-speaking Communities (3)**

Study of bilingualism from perspective of psycholinguistics. Study of different bilingual educational models and programs in the Spanish-speaking world and in the U.S.

**561 Seminar in Medieval Poetry and Prose (3)**

Examination and analysis of the epic, lyrical, and narrative medieval literature of Spain and its impact on subsequent literature. (Seminar) Pre: graduate standing or permission of instructor.

**570 Topics in Hispanic Literature and Culture (3)**

Special topics or authors not emphasized in other courses. (Seminar) Pre: graduate standing or permission of instructor.

**572 Evolution of Spanish-American Culture and Thought (3)**

Development of Spanish-American thought and cultural trends, as portrayed in major works of artists and thinkers. (Lec. 3) Pre: graduate standing or permission of instructor.

**574 Interpretations of Modern Spanish-American Thought (3)**

Topics of interest in the development of modern Spanish-American thought as represented in the essay from the period of independence to the present. (Seminar) Pre: graduate standing or permission of instructor.

**580 Seminar in 19th-Century Spanish Literature (3)**

Selected authors and topics from the Spanish Romantic movement through realism and naturalism. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic and permission of instructor.

**584 Interpretations of Modern Spain (3)**

Development of Spanish thought particularly with respect to sociological and cultural problems from the 18th century to the contemporary period as seen through the writings of significant essayists. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years.

**585 Seminar in 20th-Century Spanish Literature (3)**

Topics of aesthetic, cultural, and linguistic concern in 20th-century peninsular literature. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic and permission of instructor.

**587 Seminar in Renaissance and Baroque Literature (3)**

Aesthetic analysis of works representative of the period and their influence on subsequent literatures. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic and permission of instructor.

**588 Seminar in Colonial Spanish-American Literature and Culture (3)**

Topics of interest dealing with the development of Spanish-American cultural identity and literature from the period of discovery and colonization to independence. (Seminar) Pre: graduate standing or permission of instructor.

**589 Seminar in Modern Spanish-American Literature and Culture (3)**

Topics of interest dealing with the development of Spanish-American literature and culture from the period of independence to the present. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic.

**590 The Hispanic Presence in the United States (3)**

A study of the establishment of the Hispanic presence and its heritage in the art, folklore, and language of the United States, and an analysis of the literature of the Spanish-speaking peoples. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years.

**597, 598 Directed Study (3 each)**

Individual research and reports on problems of special interest. (Independent Study) Pre: graduate standing and approval of the director of graduate studies. May be repeated with different topic.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Statistics (STA)**

*Section Head:* Professor Hanumara

**220 Statistics in Modern Society (3)**

Elementary concepts in sampling, polls, surveys, random samples. Foundations of statistical inference; estimation, comparison prediction. Statistics for the consumer, quality of data, credibility of statistical evidence. Environmental measurements and experiments. (Lec. 2, Rec. 1) (MQ)

**307 Introductory Biostatistics (3)**

Statistical methods applicable to health sciences. Data presentation. Vital statistics and life tables. Fitting models to health data. Testing, estimation, analysis of cross-classifications, regression, correlation. (Lec. 2, Rec. 1) Pre: MTH 107 or 108 or 131 or 141 or permission. Not open to students with credit in 308 or 409.

**308 Introductory Statistics (3)**

Descriptive statistics, presentation of data, averages, measures of variation, skewness, kurtosis. Elementary probability, binomial and normal distributions. Sampling distributions. Statistical inference, estimation, confidence intervals, testing hypotheses, linear regression, and correlation. (Lec. 2, Rec. 1) Pre: MTH 107 or 108 or 131 or 141 or permission. Not open to students with credit in 307 or 409.

**409 Statistical Methods in Research I (3)**

Same as 308 but is for students who have better mathematical preparation. (Lec. 3) Pre: MTH 131 or 141. Not open to students with credit in 307 or 308.

**411 (or PHP 411 or BPS 411) Biostatistics II (3)**

An overview of statistical methods used in performing research in pharmacotherapeutics and pharmacoepidemiology. Emphasis will be on understanding both common study designs and the output from statistical analysis of data obtained from these studies. (Lec. 3) Pre: an introductory statistics course (i.e., 307) or permission of instructor.

**412 Statistical Methods in Research II (3)**

Multiple linear regression and correlation analysis, curvilinear regression. Analysis of variance and covariance. Analysis of enumerative data. Some nonparametric methods. (Lec. 3) Pre: 307 or 308 or 409.

**491 Directed Study in Statistics (1-3)**

Advanced work in statistics. Conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit.

**492 Special Topics in Statistics (3)**

Advanced topics of current interest in statistics. (Lec. 3) Pre: permission of chairperson.

**500 Nonparametric Statistical Methods (3)**

Rank and sign tests, permutation tests and randomization, run test, tests of goodness of fit, order statistics, estimation, and comparison with parametric procedures. Examples illustrating the applications of nonparametric techniques. (Lec. 3) Pre: 409.

**501 Analysis of Variance and Variance Components (3)**

Analysis of variance and covariance, experimental design models, factorial experiments, random and mixed models, estimation of variance components, unbalanced data. (Lec. 3) Pre: 412.

**502 Applied Regression Analysis (3)**

Topics in regression analysis including subset selection, biased estimation, ridge regression, and nonlinear estimation. (Lec. 3) Pre: 412.

**513 Statistical Quality Assurance**

See Industrial and Systems Engineering 513.

**515 Spatial Data Analysis (3)**

Analysis of point patterns: visualizing, exploring and modeling, space time clustering, correcting for spatial variation, clustering around a specific point source. Analysis of spatially continuous data: variogram analysis and Kriging methods. (Lec. 3) Pre: 412 or permission of instructor.

**517 Small N Designs**

See Psychology 517.

**520 Fundamentals of Sampling and Applications (3)**

Simple random sampling; properties of estimates, confidence limits. Sample size. Stratified random sampling; optimum allocation, effects of errors, and quota sampling. Regression and ratio estimates; systematic and multistage sampling. (Lec. 3) Pre: 308 or 409.

**522 Bioinformatics I (3-4)**

See Computer Science 522.

**532 (or ASP 532 or PSY 532) Experimental Design (3)**

Application of statistical methods to biological and psychological research and experimentation. Experimental situations for which various ANOVA and

ANCOVA designs are most suitable. (Lec. 3) Pre: 409 or equivalent.

**535 Statistical Methodology in Clinical Trials (3)**

Bioavailability, dose response models, crossover and parallel designs, group sequential designs, survival analysis, meta analysis. (Lec. 3) Pre: 409, 411, or 412 or permission of instructor.

**536 Applied Longitudinal Analysis**

Longitudinal data, linear mixed effects models, repeated measures ANOVA, generalized linear models for correlated data. (Lec. 3) Pre: 411 or 412 or permission of the instructor.

**541 Multivariate Statistical Methods (3)**

Review of matrix analysis. Multivariate normal distribution. Tests of hypotheses on means, Hotelling's T2, discriminant functions. Multivariate regression analysis. Canonical correlations. Principal components. Factor analysis. (Lec. 3) Pre: 412.

**542 Categorical Data Analysis Methods (3)**

Analysis of multidimensional categorical data by use of log-linear and logit models. Discussion of methods to estimate and select models followed by examples from several areas. (Lec. 3) Pre: 412.

**550 Ecological Statistics (3)**

Application of statistical methodology to the following topics: population growth, interactions of populations, sampling and modeling of ecological populations, spatial patterns, species abundance relations, and ecological diversity and measurement. (Lec. 3) Pre: 409 or permission of instructor.

**576 Econometrics**

See Environmental Economics 576.

**584 Pattern Recognition**

See Electrical Engineering 584.

**591 Directed Study in Statistics (1-3)**

Advanced work in experimental statistics conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit.

**592 Special Topics in Statistics (3)**

Advanced topics of current interest in statistics. (Lec. 3) Pre: permission of chairperson. May be taken more than once.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**610 Parsimony Methods**

See Psychology 610.

**612 Structural Modeling**

See Psychology 612.

*In addition to statistics courses offered by the Department of Computer Science and Statistics under the STA code, there are a number of statistics-oriented courses offered by other departments:*

**Business**

210 Managerial Statistics I

212 Managerial Statistics II

461 Forecasting

**Industrial and Systems Engineering**

411 Probability and Statistics for Engineers

412 Statistical Methods for Engineers

533 Advanced Statistical Methods for Research and Industry

634 Design and Analysis of Industrial Experiments

**Mathematics**

451 Introduction to Probability and Statistics

452 Mathematical Statistics

550 Probability and Stochastic Processes

551 Mathematical Statistics

**Master's of Business Administration**

500 Statistical Methods for Management

582 Applied Time Series Methods and Business Forecasting

**Psychology**

300 Quantitative Methods in Psychology

533 Advanced Quantitative Methods in Psychology

**Textiles, Fashion Merchandising, and Design (TMD)***Chairperson:* Professor Welters**103 Textile Products (3)**

Product knowledge in design, manufacturing, and merchandising within the textile complex. Emphasis on domestic and international issues. Survey of careers in business, industry, government, and research. (Lec. 3)

**113 Color Science (3)**

The science of color: light and its interaction with objects and color vision. Color explained, mixed, measured, described, and reproduced (paints, dyes, photography, TV). Color in the natural world. (Lec. 3) (N)

**222 Apparel Production (3)**

Analysis of apparel construction and production; current industrial and technological developments. Discussion of sizing and quality standards with emphasis on identification of fabrics, garment styles, findings, and trims. (Lec. 3) Pre: 103.

**224 Culture, Dress, and Appearance (3)**

Analysis of social, psychological, and cultural factors in the creation, maintenance, and use of human appearance. Focus on dress and appearance as a communication system from cross-cultural and international perspectives. (Lec. 3) (FC) or (S) [D]

**226 Interior Design I (3)**

Physical, social, psychological, economic, and aesthetic aspects required of interiors for single and multiple dwellings; interactive functions of residential and commercial spaces; elements and principles of design. (Lec. 3) Pre: ART 101 or 207 or ARH 120 or 251 or 252.

**232 Fashion Retailing (3)**

A comprehensive study of fashion retailing as an operating system. Examination of the strategies and the organizational structure that support the fashion retail system. (Lec. 3/Online)

**240 Development of Contemporary Fashion (3)**

History of contemporary fashion from the beginning of the 20th century to the present. Influence of designers, buyers, consumers, and technology on fashion in the marketplace. (Lec. 3) Pre: 103 and sophomore standing.

**303 Textile Science (3)**

The primary textile industry: fiber to finished fabric. Textile fibers and their properties; yarns, fabric construction, dyeing, finishing, and printing. (Lec. 3) Pre: TM or TMD majors admitted to the College of Human Science and Services with junior standing and credit in CHM 105. TMD 313 must be taken concurrently.

**313 Textile Science Laboratory (1)**

Laboratory exercises in fiber identification, fabric analysis, and fabric performance testing, dyeing, and finishing. (Lab. 2) Students must be admitted to the degree-granting college (HSS) as TMD or TM majors, and concurrently enrolled in 303.

**325 Apparel I (4)**

Principles of garment production as related to construction, fit, performance, quality, and cost. Construction techniques, sizing, material evaluation, and assembly management. Quality analysis and introduction to computer-aided design. (Lec. 2, Lab. 4) Pre: 103 and 226.

**326 Interior Design II (3)**

Application and implementation of design concepts to interior spaces; elevations, sections, materials selection, isometrics and perspectives, presentation boards. Introduction to computer-aided design (Lec. 2, Lab. 2) Pre: TMD 103 and 226.

**327 Apparel Design (3)**

Design principles as applied to contemporary clothing with emphasis on various age groups and special populations. Laboratory experiences concentrate on the creative process and development of illustrative techniques. (Lec. 2, Lab. 2) Pre: ART 101 or 207 or ARH 120 or 251 or 252 and TMD 222 or 325.

**332 Fashion Merchandise Buying (3)**

The theory of fashion merchandising and its application to basic retailing procedures, the responsibility of the buyer, and procedures used to determine consumer demand, merchandise selection, and pricing. (Lec. 3) Pre: 103, 224, and 232.

**335 Apparel II (3)**

Application of flat pattern design. Special emphasis on sloper development and pattern drafting. Creative laboratory processes from design to finished

product. (Lec. 2, Lab. 2) Pre: 325 or permission of instructor.

**342 Fashion Study Tour (1)**

Students spend two weeks overseas during intersession studying the apparel and/or interior furnishings market in London and Paris. Lectures and tours by designers, manufacturers, and retailers. Students may register once in apparel and once in interior furnishings. Travel costs are extra. (Practicum) Pre: junior standing or permission of instructor.

**345 CAD Apparel Design (3)**

Application of flat pattern design using computer-aided design techniques as related to sloper development, sizing, and pattern manipulation. Creative laboratory processes from design to finished product. (Lec. 2, Lab. 2) Pre: 335 or permission of instructor.

**346 Computer-Aided Textile and Apparel Design (3)**

Development and production of textile and apparel designs and patterns using selected computer software packages. Implications for use in the apparel industry. (Lec. 1, Lab. 4) Pre: 327 or permission of instructor.

**355 Draping for Apparel (3)**

Application of draping techniques for apparel pattern making and design. Includes sloper development and draping in fashion fabric. Creative laboratory processes from design to finished product. (Lec. 2, Lab. 2) Pre: 335 or permission of instructor.

**358 Weaving (3)**

Introduction to hand weaving including on-loom and off-loom techniques. Designing, drafting, warping, and finishing of various types of weaves. Students complete samplers and projects. (Lec. 1, Lab. 4)

**361, 362 Special Problems (1-4 each)**

Open to qualified juniors and seniors who wish to do advanced work. (Independent Study) Pre: approval of application by instructor and chairperson. May be repeated for a maximum of 6 credits.

**402 Seminar in Textiles and Clothing (1-2)**

Recent developments in manufacturing, marketing, and retailing of textile products. Discussion of fashion issues and impact on consumer. Lectures by speakers from business, industry, and government. (Lec. 1-2) Pre: junior or senior standing or permission of instructor. May be repeated once.

**403 Textile Performance (3)**

Analysis of textiles using test methods and standards adopted by government, industry, and buyers to insure consumer satisfaction. Interpretation of test data in relation to consumer expectations and performance claims. (Lec. 2, Lab. 2) Pre: 103 and 303 or permission of instructor.

**413 Dyeing and Finishing of Textiles (3)**

Study of chemical and physical interactions of dyes and finishes with textile fiber/fabric systems. Evaluation of application techniques. Detection and evaluation of problems resulting from dyeing and finishing. (Lec. 2, Lab. 2) Pre: 303 or permission of instructor.

**424 Fashion Theory and Analysis (3)**

Principles, theories, and recent investigations of the fashion process are presented to develop analytical skills for evaluating consumer behavior, as related to clothing and adornment. Application to contemporary trends. (Lec. 3) Pre: senior or graduate standing.

**426 Historic and Contemporary Furniture (3)**

Review of major historical styles of furniture and their influence on contemporary furniture design. Materials, styles, and construction of contemporary furniture. In-depth study of upholstery fabrics. (Lec. 3) Pre: 103, 226.

**427 Portfolios and Presentations (3)**

Students create design portfolios using traditional media and digital techniques. Development of original ideas in sketches and technical flats. (Lec. 2, Lab. 2) Pre: 327 or permission of instructor. Not for graduate credit.

**432 Fashion Merchandising Operations****Control (3)**

Analysis of determinants of fashion merchandising profitability below gross margin; expense analysis, classification, allocating expense center accounting, and key operating ratios. Emphasis upon modification and control of selling cost ratios. (Lec. 3) Pre: 232 and 332.

**433 Textile Markets (3)**

Study of social, economic, and political issues that affect the development, production, and marketing of textile products. Study of the textile needs of the apparel, home furnishings, industrial, and medical industries. (Lec. 3) Pre: 303 and ECN 201 and 202.

**440 Historic Textiles (3)**

Chronological study of textiles, emphasizing socio-economic, religious, and political influences. Contribution of designers, inventors, trade groups, and industrialists. (Lec. 3) Pre: 303 and 313 or permission of instructor.

**441 History of Western Dress (3)**

Study of western dress from earliest civilizations to early 20th century and factors that affect design, production, and use; material culture analysis of a pre-20th century garment or accessory. (Lec. 3) Pre: 303 and 313 or permission of instructor.

**442 Fashion Promotion (3)**

Emphasis on understanding and applying the principles of fashion retailing communication. Evaluation and application of effective promotional activities such as visual merchandising and fashion shows

to trade and retail levels of fashion merchandising. (Lec. 3) Pre: 232 and 332 or permission of instructor.

**452 Consumer Behavior in Fashion Retailing (3)**

Use by fashion retailing management of explanatory and predictive models of consumer behavior relating to fashion merchandising in establishing retail policy and strategy. (Lec. 3) Pre: 232 and 332 or permission of instructor.

**461, 462 Internship (1–6)**

Structured internship in textiles, apparel, or interior design supervised by a faculty advisor. Juniors and seniors work in business, industry, or other agencies under supervision of qualified personnel. (Minimum of 45 hours per semester per credit) May be repeated for a maximum of 12 credits. Pre: completion of 60 credits, minimum GPA of 2.00, and permission of instructor and chairperson. Not for graduate credit.

**500 Ethnic Dress and Textiles (3)**

Survey of regional styles of dress and textiles from all areas of the world, excluding fashionable dress. Influence of social, economic, technological, and aesthetic factors. (Lec. 3) Pre: 224 or equivalent, 440, 441 or permission of instructor. In alternate years.

**503 Topics in Textile Science (3)**

Advanced study in a particular area of textile science. One topic will be studied from a list that includes dyeing, finishing, printing, polymer and fiber chemistry, dyestuff chemistry, and color science. (Lec. 2, Lab. 2) Pre: graduate standing, 303 or equivalent, or permission of instructor. May be repeated up to three times with different topics.

**510 Research Methods in Textiles (3)**

Application of research methodology to the study of textiles and clothing. Approach is multidisciplinary in that experimental, social science, and historic methods are covered. (Lec. 3) Pre: graduate standing or permission of instructor.

**513 Detergency (3)**

Study of composition and function of surfactants and additives in laundry detergents for home, industrial, and institutional applications; effect of fabric, water, and soil on cleaning; evaluation of laundry products. (Lec. 2, Lab. 2) Pre: graduate standing, 303 or equivalent, or permission of instructor. In alternate years.

**518 Introduction to Textile Conservation (3)**

Survey of methods used to analyze, clean, repair, store, and exhibit historic textiles and apparel. Laboratory experience in conservation practices. (Lec. 2, Lab. 2) Pre: a textile science course and historic textiles or costume course, or permission of instructor.

**524 Cultural Aspects of Dress (3)**

Seminar in social, psychological, and cultural aspects of dress. Symbolic interaction and other dress-relevant theories concerning individual motivation and

group interaction. (Seminar) Pre: 224 or permission of instructor.

**528 Cleaning Historic Textiles (1)**

Application of aqueous and solvent cleaning treatments used by textile conservators on historic and ethnographic textiles and apparel. (Lab. 2) Pre: 518 and concurrent enrollment in 513, or permission of instructor. In alternate years.

**530 Historic Textile Internship (2–4)**

Supervised internship designed to introduce the student to management of textile and costume collections in a museum or historical society setting. Individually designed to suit student needs: conservation, education, and research. (Practicum) Pre: 510, 518, graduate standing in textiles, fashion merchandising, and design, or permission of chairperson.

**538 Repair and Stabilization (3)**

Study of repair and stabilization practices used by textile conservators; evaluation of materials and techniques for treating damaged objects. (Lec. 2, Lab. 2) Pre: 518, experience in textile conservation, or permission of instructor. In alternate years.

**540 Special Problems in Textiles and Clothing (3)**

Supervised independent study in specific areas of textiles and clothing. (Independent Study) Pre: permission of chairperson. May be repeated once.

**548 Exhibition and Storage of Historic Textiles (3)**

Study of how light, temperature, humidity, and stress affect textiles and apparel; review of exhibition and storage techniques and materials; preparation of an exhibition for the Textile Gallery. (Lec. 2, Lab. 2) Pre: 518, experience in textile conservation and exhibition, or permission of instructor. In alternate years.

**558 Topics in Textile Conservation (1–3)**

Investigation of textile conservation theory and methodology. Some topics will include laboratory assignments. (Lec. 1–3) Pre: 518 or experience in textile conservation, and permission of instructor. May be repeated with different topic.

**568 Special Problems in Textile Conservation (1–3)**

Supervised independent studies on specific textile conservation projects or research. (Independent Study) Pre: 518 or experience in textile conservation, and permission of instructor. May be repeated for a maximum of 6 credits.

**570 Topics in Historic Textiles or Costume (3)**

Advanced study in a particular area of historic textiles or costume using artifactual and documentary primary sources. Use of historic textile and costume collection. (Lec. 3) Pre: 440, 441 or equivalent. May be repeated for a maximum of 6 credits.

**580 Curatorship (3)**

Supervised experience planning and mounting an exhibition in URI Textile Gallery. Student identifies a theme, selects artifacts, writes proposal, prepares objects, writes labels and promotional materials, and helps install exhibit. (Practicum) Pre: 518 and permission of instructor, 548 recommended.

**599 Master's Thesis Research**

Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

**Thanatology**

*Coordinator: Professor Miller (College of Nursing)*

**Human Development and Family Studies**

421 Death, Dying, and Bereavement;  
471 Responding to Grief

**Nursing**

360 Impact of Death on Behavior  
390 Directed Study in Thanatology  
523 Contemporary Thanatology  
524 Exploring Loss through Creative Arts  
525 Spirituality of Loss and Death for Health Professionals  
526 Loss Across the Life Span  
529 Special Topics in Thanatology

*In addition, special topics and directed studies in thanatology may be offered by the Department of Human Development and Family Studies, the College of Nursing, and the Honors Program.*

**Theatre (THE)**

*Chairperson: Associate Professor McGlasson*

*Courses in theatre offer theory, production, design, and performance training in various areas of dramatic arts, and many are open to nonmajors. The Theatre Department conducts open auditions and makes performance and production work available to all members of the URI community.*

**100 Introduction to Theatre (3)**

Designed to provide students with a theoretical and practical understanding of the theatrical process as well as to develop critical standards and increase the enjoyment of theatre as an art. (Lec. 2, Lab. 4) Not open to theatre majors. (A)

**111 Introduction to Acting (3)**

Designed to initiate students to theatre as a collaborative art through systematic exposure to the principles and techniques of acting. (Studio 6)

**112 Introduction to Acting II (3)**

To expand the work of 111 (exercise for relaxation, concentration, imagination) with character work on a monologue and scene complemented by intense

work on voice, text, and movement. (Lec. 2, Lab. 2) Pre: 111.

**161 Introduction to Stagecraft (3)**

Stage carpentry, rigging, properties, scene painting, and lighting mechanics with practical experience working on productions. (Lec. 2, Lab. 2)

**181 Script Analysis (3)**

Analysis of plays from varying perspectives of the actor, director, and designer. Course emphasizes theatre terminology and develops a working vocabulary. (Lec. 3) (A)

**182 Script Analysis for Film Media (3)**

Understanding scripts through analysis of structure, character, language, genre, and style and their evolution from page to film. Scripts, videos, and DVDs will be studied. (Lec. 3)

**211, 212 Basic Acting I, II (3 each)**

Introduction to the theory and basic techniques of acting. Includes moment-to-moment improvisation, the reality of doing, fantasy work, and voice and movement. (Studio 6) Pre: (for 211) 111, 112, and concurrent enrollment in 213. 212: Continuation of 211. Pre: 211.

**213 Acting Workshop (1)**

A voice-movement workshop to be taken concurrently with 211. (Studio 2) Pre: concurrent enrollment in 211.

**214 Acting Workshop (1)**

A voice-movement workshop to be taken concurrently with 212. (Studio 2) Pre: concurrent enrollment in 212.

**217 The Role of Music in Theatre (3)**

Perspectives on music and its relationship and application to the theatre for theatre students. Musical vocabulary, performance techniques, and conventions related to the theatre. Emphasis on relationship of music and musical performance to all aspects of theatrical production. (Studio 6) Pre: permission of instructor. May be repeated for a maximum of 6 credits with permission of instructor.

**221 Stage Management (3)**

Theoretical and practical study of the basic methods and procedures of the production with emphasis on the director-stage manager relationship and the role of each. Participation in productions required. (Lec. 2, Lab. 2)

**227 Dance for Musical Theatre (3)**

Orientation and instruction in beginning dance for the musical stage. Dance vocabulary in jazz, ballet, tap; performance techniques and conventions related to the American musical. (Studio 6) Pre: theatre major or permission of instructor. May be repeated once with permission of instructor.

**237 Stage Combat (3)**

Fundamental principles of safety, form, choreographic conception, and execution. Unarmed combat included. Eventual application in a performance environment geared to beginning and advanced students. (Studio) Pre: permission of instructor.

**250 Costume Laboratory (3)**

Practical experience in the principles of costuming including construction and finishing techniques, and experience working on a theatrical production. (Lec. 1, Lab. 4)

**261 Introduction to Theatre Design (3)**

Introduction to theatre production design with emphasis on development of capabilities for expression in conceptual and graphic terms. Projects in stage scenery, costumes, and lighting. (Lec. 2, Lab. 2)

**291 Production Laboratory (1)**

Orientation and instruction in theatre through tutored participation in crews and production assignments or projects for departmental productions. (Independent Study) May be repeated for credit.

**300 Individual Problems in Theatre Studies (1-3)**

Individual theatre work on an approved project under supervision of a faculty member. (Independent Study) May be repeated for a maximum of 6 credits.

**301 Special Group Studies (1-3)**

Group theatre work in approved production projects under supervision of a faculty member. (Independent Study) May be repeated for a maximum of 6 credits.

**307 Creative Dramatics (3)**

Explores purposes, techniques, and benefits of drama in the K-12 classroom. Theory and practice of creative dramatics, methodologies, and activities. Teaching practicum in and out of the class to develop utilization of creative drama to teach a variety of skills. (Lec. 2, Lab. 2)

**311, 312 Intermediate Acting I, II (3 each)**

311: Continuation of Basic Acting with emphasis on approaches to characterization through improvisation and through the analysis and performance of assigned scenes. (Studio 6) Pre: 212; concurrent enrollment in 313. 312: Continuation of 311. (Studio 6) Pre: 311; concurrent enrollment in 314.

**313 Acting Workshop (1)**

A voice-movement workshop to be taken concurrently with 311. (Studio 2) Pre: concurrent enrollment in 311.

**314 Acting Workshop (1)**

A voice-movement workshop to be taken concurrently with 312. (Studio 2) Pre: concurrent enrollment in 312.

**321 Orientation to Play Direction (3)**

Director's role in the process of theatre production. Emphasis on development of production concepts and rehearsal techniques. (Lec. 2, Lab. 2)

**322 Play Direction (3)**

Practical course in play direction. Class functions as a production unit and mounts a season of one-act plays. (Practicum: minimum of 6 hours per week) Pre: 321 and permission of instructor.

**331 Playwriting (3)**

Analysis and evaluation of written material supplemented by play readings and workshop tryouts of students' plays. (Lec. 2, Lab. 2)

**341 Theatre Management (3)**

Principles, terminology, and practical technique of theatre administration. Emphasis on stage management. Assignments will be made to departmental productions. (Lec. 2, Lab. 2)

**350 Makeup (1)**

Principles and techniques of stage makeup. Practical experience in application through a number of projects in developing character makeups with prosthetics, wigs, and facial hair. (Studio 2) Open to senior theatre majors only. Others by permission of instructor.

**351, 352 Principles and Theories of Theatrical Costuming I, II (3 each)**

351: Analytical study of fashions, modes, and manners in Western civilization as required for modern theatrical production; early recorded history to the Renaissance. (Lec. 3) 352: Continuation of 351; the Renaissance to the present. (Lec. 3) (A) [D]

**355 Stage Costume Design (3)**

Costume design theories and techniques for modern and period plays in a wide variety of styles. (Studio 6) Pre: 261 and 351 or 352 or permission of instructor.

**362 Scene Painting (3)**

Problems in scene painting, including use of color, basic techniques in scenic art such as texturing, trompe l'oeil, work from design elevations, carving, and some work in plastics. (Studio 3)

**365 Scene Design (3)**

Theories and techniques of scenic design, emphasizing conceptualization and development of stage setting through project designs for various stage forms, production styles, and periods. (Studio 6) Pre: 261 or permission of instructor.

**371 Stage Lighting (3)**

Theories and techniques of lighting for the stage. A series of design projects and lab work introduces students to script analysis and conceptualization for lighting, instrumentation, and the use of color in stage lighting. (Lec. 2, Lab. 2)

**381 History of Theatre to 1642 (3)**

General history of the theatre from its origins through the Renaissance. Introduction to non-Western drama of the period. Course focuses on the actor, staging, and the audience as they have influ-

enced the development of the theatre and dramatic literature. (Lec. 3) (A)

**382 History of Theatre: Neoclassical Through the 19th Century (3)**

Course includes non-Western drama of China, Japan, and Korea. Continuation of 381. (Lec. 3) (A)

**383 History of the Modern Theatre (3)**

Modern theatre and drama from 1880 to the present. Course includes new European stagecraft and its influence on the development of modernist and postmodernist drama, and contemporary non-Western drama. (Lec. 3) (A)

**384 American Theatre History (3)**

Origins and development of American theatre from the wilderness to the contemporary Broadway and off-Broadway stage, including the evolution of the musical play. Analysis of special contributions made by the grassroots movement, the university theatres, the Federal Theatre Project, and the regional theatre movement. (Lec. 3)

**391 Advanced Production Laboratory (1-2)**

Advanced instruction in theatre through tutored participation in crews and production assignments or projects for departmental productions. (Independent Study) May be repeated for credit.

**400 Advanced Individual Problems in Theatre Studies (1-3)**

Advanced individual theatre work on an approved project under supervision of a faculty member. (Independent Study) May be repeated for a maximum of 6 credits. Not for graduate credit.

**401 Advanced Special Group Studies (1-3)**

Advanced group theatre work in approved production projects under supervision of a faculty member. (Independent Study) May be repeated for a maximum of 6 credits. Not for graduate credit.

**411, 412 Scene Study (3 each)**

Emphasis on the analysis and interpretation of assigned scenes representative of the major theatrical genres and styles. (Studio 6) Pre: for 411, 312, and permission of instructor and concurrent enrollment in 417; for 412, 411 and concurrent enrollment in 418. Not for graduate credit.

**413 Special Workshop in Acting (3)**

Techniques related to a specific aspect or style of performance; e.g., masks, puppetry, verse-speaking, and improvisation. The study is normally related to a departmental production or special project. (Studio 6) Pre: permission of instructor. May be repeated for a maximum of 6 credits. Not for graduate credit.

**415 Professional Internship (6-12)**

Designed for junior and first-semester senior theatre majors who desire a professional experience. This program provides instruction and practical experi-

ence in cooperation with a faculty advisor and a professional theatre. (Practicum) Pre: permission of chairperson. Not for graduate credit.

**417 Acting Workshop (1)**

A voice-movement workshop to be taken concurrently with 411. (Studio 2) Pre: concurrent enrollment in 411. Not for graduate credit.

**418 Acting Workshop (1)**

A voice-movement workshop to be taken concurrently with 412. (Studio 2) Pre: concurrent enrollment in 412. Not for graduate credit.

**420 Advanced Directing Practice (1-3)**

Special projects for the advanced directing student. Student directors will assume production responsibilities for all aspects of their projects, including a critical analysis upon completion. Weekly tutorial required. (Independent Study) Pre: 321, 322, or equivalent and permission of instructor. Not for graduate credit.

**441 Advanced Theatre Management (3)**

Individual projects of theatre management in a major departmental production or project. (Practicum) Pre: 341. Not for graduate credit.

**451 Stage Costume Technology (3)**

Construction methods and techniques appropriate to stage costuming with emphasis on major theatrical periods and productions. (Studio 6) Pre: 351 or 352 or permission of instructor. May be repeated for a maximum of 6 credits. Not for graduate credit.

**455 Advanced Costuming (1-3)**

Individual projects in costume design for studio or major productions. Styles and theory related to projects; costume sketches and construction. (Independent Study) Pre: 355 or permission of instructor. Not for graduate credit.

**463 Special Workshop in Design and Technical Theatre (3)**

Techniques related to a specific aspect or style of production; e.g., masks, puppetry, wig making, sound effects, projections, properties. Normally related to a departmental production or special project. (Lab. 6) May be repeated for a maximum of 6 credits. Not for graduate credit.

**465 Advanced Scene Design (1-3)**

Individual projects in designing scenery for studio and major productions. (Studio 2-6) Pre: 365 and permission of instructor. Not for graduate credit.

**475 Advanced Stage Lighting (1-3)**

Individual projects in lighting design and control for studio and major productions. (Studio 2-6) Pre: 371 and permission of instructor. Not for graduate credit.

**481 Topics in Theatre (3)**

Selected topics in theatre. (Seminar) May be repeated for credit with different topic.

**484 Special Research Project (3)**

An in-depth study of a single critical or historical aspect of theatre. The subject is normally related to a departmental production. (Independent Study) Pre: upper-division standing. May be repeated for a maximum of 6 credits. Not for graduate credit.

## **University of Rhode Island Freshman Seminar (URI)**

*Coordinator:* Dean Richmond

**101 Traditions and Transformations: A Freshman Seminar (1)**

Introduces first-year students to the traditions of higher education and academic culture and to significant societal and personal issues that bear on developing goals for the undergraduate years. Required of all new freshmen and new transfer students with less than 24 credits. May not be repeated for credit.

**101 B Traditions and Transformations**

[for B.G.S. students] may be taught online. Note: The community service component of URI 101 is part of the Feinstein Enriching America Program.

## **Women's Studies (WMS)**

*Director:* Professor Stein

**150 Introduction to Women's Studies (3)**

Images of women, the theories and processes of socialization, historical perspectives, and implications for social change. (Lec. 3/Online) Service learning in some sections. (S) [D]

**220 Women and the Natural Sciences (3)**

An interdisciplinary perspective on women as practitioners and subjects of the natural sciences; history of women in science; science as a gendered discourse. (Lec. 3) (L) [D]

**300 Field Experience in Women's Studies (2-6)**

Supervised field work allowing students to learn through direct personal experience about the background, problems, and concerns of particular populations of women. (Practicum) Service learning. Pre: 150 or 315 or permission of instructor. May be taken or repeated for a maximum of 6 credits.

**301 Women's Professional Development and Leadership (3)**

Theory, data, and skill development for career building and leadership. Gender issues in organizational settings, developing professional skills and responses to challenges in the workplace, and strategies for positive change. (Lec. 3/Online)

**305 Current Issues in Women's Studies (1)**

Research and analysis of one issue such as job discrimination or sex trafficking. Class plans a project addressing the issue. (Lec. 1) Pre: 150. May be repeated once if topic changes.

**306 Practicum in Women's Studies (1)**

Practicum. Students work alone or in groups to conduct a project developed in 305. May be repeated once if topic changes. (Lec. 1) Pre: 305.

**310 Race, Class, and Sexuality in Women's Lives (3)**

Interconnections among race, ethnicity, class, and sexuality and the impact of sexism, racism, classism, and heterosexism on women's lives are investigated. Alliance building among women is explored. (Lec. 3) Pre: 150 or 315 or permission of instructor.

**315 Introduction to Feminist Theories and Methodologies (3)**

Development of feminist thought, exploration of contemporary feminist theories and research methods, including African-American, lesbian, Western and non-Western perspectives, and the future role of feminist theories and methodologies. (Lec. 3/Online) Pre: 150 or permission of instructor. (L) [D]

**317 (or ENG 317) Contemporary Women Novelists of the Americas (3)**

Novels by contemporary women writers from the American continents. Topics include construction of the female body, sexuality and desire, motherhood, exile and immigration, women and work. (Lec. 3) (A) [D]

**320 Feminist Thought into Action (3)**

Analysis and discussion of how feminist thought has been transformed into action for social change. Women's civil and human rights. Political thought, analysis, and activism in campaigns for women's rights. Pre: 150 or permission of instructor. (L) or (S) [D]

**325 International Women's Issues (3)**

Focuses on women's rights in a global context, ideologies and practices that deny women equal status in society, including violence against women, freedom and democracy movements, and women's rights. (Lec. 3) Pre: 150 or permission of instructor.

**350, 351 Special Topics in Women's Studies (3)**

Selected areas of study pertinent to women's studies. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Lec. 3) Some topics may be offered online. May be repeated with different topic.

**360 Men and Masculinities (3)**

Examines from a feminist perspective the values, beliefs, myths, realities, research, and writings about men and masculinities in contemporary United States life. (Seminar). Pre: 150.

**365 Sexual Victimization (3)**

Analysis of a range of victimizations, based on gender and sexualities. Consideration of heterosexist and homophobic reactions through such acts as bullying, harassment, abuse, and assault; intersections with

age, race, and gender. (Seminar) Pre: 150 or permission of instructor.

**370 Sex Trafficking (3)**

Focuses on the commercial sexual exploitation and slavery of women and girls and the impact on their health, rights, and status in society. (Lec. 3/Online) Pre: 150 or permission of instructor.

**400 Critical Issues and Feminist Scholarship (3)**

Theoretical and value questions in women's studies; impact of feminist scholarship on traditional disciplines; feminist theory and research methods in selected fields; the future of feminism. (Seminar) Pre: 315 or 310 or 320 and senior standing or permission of instructor.

**401 Human Trafficking and Contemporary Slavery (3)**

Focuses on contemporary human trafficking and slavery, including sex trafficking, bonded labor, forced labor, child soldiers, and domestic servant slavery. (Lec. 3) Pre: junior standing or permission of the instructor. Not for graduate credit.

**402 Campaigns and Services for Victims of Trafficking and Slavery (3)**

Focuses on historical and contemporary campaigns for ending human trafficking and slavery and on providing services to contemporary victims of human trafficking and slavery. (Lec. 3/Online) Pre: junior standing or permission of instructor. Not for graduate credit.

**410 Portfolio in Women's Studies (1)**

Portfolio of student papers and projects as culmination of women's studies course work. (Lec. 1) Pre: WMS majors and minors in senior year. Not for graduate credit.

**450 Independent Study (3)**

Advanced work in women's studies under the direction of a faculty member affiliated with the women's studies program. (Independent Study) Pre: junior or senior standing. May be repeated for a maximum of 6 credits.

**490 Advanced Topics in Women's Studies (1-3)**

Advanced study in topics of special interest in women's studies. This course will be conducted as a seminar for juniors, seniors, and graduate students. Pre: 315 or 310 or 320 and senior standing or permission of instructor. (Seminar) Some topics may be offered online. May be repeated with different topic.

**500 Colloquium in Women's Studies (2-3)**

Discussion of research methods in women's studies; presentations on current research and issues relevant to women's and gender studies.

Following are related courses offered by various departments of the University.

#### African and African-American Studies

290 African-American Women: Service, Community, and Self

#### Anthropology

310 Gender and Culture

#### Art History

285 Women in Art

#### Business Administration

346 Women in Business and Management

#### Communication Studies

345 Gender and Communication

#### Community Service

303 Service in the Community

#### English

260 Women and Literature

385 Women Writers

#### History

118 Women in European History

145 Women in the North American Colonies and the United States, 1500-1890

146 Women in the United States, 1890-Present

308 Between Eve and Mary: Women in the Middle Ages

351 History of Women in Medicine

352 Topics in the History of Women and Gender

355 Black Women in the U.S.: Colonial Times to the Present

376 Women in Muslim Societies

391 Directed Study or Research (when the topic is women)

#### Human Development and Family Studies

230 Marriage and Family Relationships

298 Contemporary Issues in Student Development

430 Family Interaction

432 Perspectives on Parenting

433 Family Life Education

437 Law and Families in U.S.

505 Human Sexuality and Counseling

559 Gender Issues in Therapy

#### Kinesiology

375 Women in Sport: Contemporary Perspectives

555 Women in Sport: Issues and Controversies

#### Nursing

150 Human Sexuality

459 Perspectives on Male and Female Sexuality

#### Philosophy

210 Women and Moral Rights

#### Political Science

441 Women and Politics

#### Psychology

430 Intimate Relationships

466 Child Sexual Abuse

480 Psychology of Women

#### Sociology

212 Families in Society

242 Sex and Gender

413 Gender Inequality

420 Family Violence

430 Intimate Relationships

#### Textiles, Fashion Merchandising and Design

224 Culture, Dress, and Appearance

*In addition, special topics may be offered by other departments.*

## Writing (WRT)

Director: Professor Reynolds

#### 100 Introduction to College Writing (2)

Practice in topic development, research techniques, documentation and attribution, and process-based writing. Focuses on thesis statements, topic sentences, paragraphing, coherence, and syntax. (Lec. 2) Pre: admission to Talent Development's pre-matriculation program.

#### 104 Writing to Inform and Explain (3)

Writing emphasizing the sharing of information. Varieties and strategies of expository writing for differing audiences and situations. Genres may include reports, proposals, letters, reviews, Web sites, academic essays. (Lec. 3) Not open to students with credit in 105 or 106. (ECw)

#### 105 Forms of College Writing (3)

Practice in writing papers frequently assigned in introductory and general education courses across the curriculum. May include summaries, syntheses, annotations, reaction papers, text analysis, documented thesis-support papers. Emphasizes disciplinary conventions. (Lec. 3) Not open to students with credit in 104 or 106. (ECw)

#### 106 Introduction to Research Writing (3)

Introduction to working with sources and the research process. Guided help in conducting interviews, observations, and database searches. All assignments contribute to a major research report. Not open to students with credit in 104 or 105. (Lec. 3) (ECw)

#### 201 Writing Argumentative and Persuasive Texts (3)

Concepts, methods, and ethics of argumentative and persuasive writing. Writing argumentatively to examine complex issues, define values, resist coercion, and seek common ground among diverse publics. (Lec. 3) (ECw)

#### 227 Business Communications (3)

Basic business communications forms, group reports and presentations, effective use of electronic mail systems, and design of graphic aids for successful visual communication. (Lec. 3/Online) Open to business majors with sophomore or higher standing.

Open to a limited number of writing majors with sophomore or higher standing. (ECw)

#### 235 Writing in Electronic Environments (3)

Includes writing with computers; email; Internet; text on screen, graphic- and audio-enhanced text; desktop publishing; study of document design and the history of writing as shaped by technologies. (Lec. 3/Online) (ECw)

#### 270 Writing Our Selves: Writing in the Expressivist Tradition (3)

Focuses on the expressivist tradition of writing, including memoirs, medical narratives, nature meditations, and informal essays. (Seminar) Pre: any 100-level WRT course.

#### 302 Writing Culture (3)

Experience with noncanonical writings that sustain or reshape culture. May include profiles and biographies, reviews, food and fashion writing, liner and exhibition notes. (Lec. 3/Online) (ECw)

#### 303 Public Writing (3)

Writing in the public sphere. Emphasizes civic literacy, democratic discourse, and writing for social change. May include letters, public documents, electronic forums, activist publications, legislative texts. (Lec. 3) (ECw)

#### 304 Writing for Community Service (3)

Study and practice of nonacademic writing for community service organizations. Entails substantial outreach, teamwork, research, composing, designing, and revision. May include brochures, recommendation reports, Web sites, membership packets. Service Learning. (Lec. 3) (ECw) [D]

#### 305 Travel Writing (3)

Writing about places both new and familiar. Emphasis on descriptive techniques, the use of facts, and different critical and cultural perspectives. May include place journals, book reviews, proposals, non-fiction essays. (Lec. 3/Online) (ECw) [D]

#### 306 Writing Health and Disability (3)

Explores the ways we experience, label, and politicize health and disability in our culture. Writing may include narratives, cultural critiques, persuasive essays, and policy proposals. (Lec. 3)

#### 333 Scientific and Technical Writing (3)

Practice in specific forms of writing in the scientific and technical fields. (Lec. 3) Competence in basic skills required. (ECw)

#### 353 Issues and Methods in Writing Consultancy (3)

Practice and theory of one-to-one instruction emphasizing varied writing situations and multiple learning styles. Covers approaches to collaboration, learning, writing, and responding. Offers strategies for making appropriate writing choices. (Lec. 3)

**360 Composing Processes and the Canons of Rhetoric (3)**

Examines historical and contemporary theories of composing and rhetorical canons: writing processes, style and arrangement, and relationships among writing, learning social contexts, technology, and publication. Field research on professional writers. (Lec. 3) Pre: 201 and another WRT course at the 200-level or above.

**383 Field Experience in Writing Consultancy**

Supervised field experience, tutoring in the Writing Center or in the undergraduate peer consultants program. Pre: 353 or permission of instructor. May be repeated for a maximum of 9 credits.

**435 (or EDC 435) The Teaching of Composition (3)**

Philosophy, materials, and methods underlying the teaching of writing with emphasis on current approaches including the application of linguistics. Offers practice in writing workshop techniques, marking, constructing assignment sequences, and individualized instruction. (Seminar) Pre: junior standing or permission of instructor.

**484 Internship in Writing and Rhetoric (1-3)**

Practice and direct supervision in workplace writing. Placement options include community-based, governmental, technological, health services, military, educational, and nonprofit organizations. (Practicum) Pre: 60 credits with a minimum of 12 in WRT, 2.50 GPA, and permission of faculty advisor. May be repeated for a maximum of 6 credits. S/U only.

**490 Writing and Rhetoric (3)**

Study emphasizing audience, composing processes, and rhetorical theories, including issues relevant to writing professionally. (Lec. 3) Pre: 360.

**495 Composing Electronic Portfolios (3)**

Capstone for WRT majors. Readings in electronic writing technologies and portfolios. Preparation of a substantive collection of representative writings. Culminates in an electronic portfolio and a public writing showcase. (Lec. 3) Pre: 360 and an additional 300-level writing course. Not for graduate credit.

**512 Studies in Rhetorical Theory (3)**

Emphasis on written discourse and the relationships among language, epistemology, and subjectivity. Readings will range from classical to contemporary and will reflect the expanding canon of rhetorical theory. (Lec. 3) Pre: graduate standing or permission of instructor.

**524 Histories and Theories of Writing Instruction (3)**

Traces the origins and influences on current writing instruction, beginning with composition treatises of the 19th century and concluding with an analysis of contemporary practices. May include archival research. (Lec. 3) Pre: graduate standing or permission of instructor.

**533 Graduate Writing in Life Sciences (3)**

Graduate writing skills for the life and environmental sciences; writing and editing journal articles, proposals; rhetorical analysis of scientific writing. (Lec. 2, Lab. 2) Pre: WRT 104, 105, or 106 or equivalent or permission of instructor; graduate standing or senior status. Next offered spring 2009.

**645 Seminar in Rhetoric and Composition (3)**

Critical and theoretical conceptions of rhetoric and rhetoricality with varying historical periods and/or connections to cultural studies, literature, and composition studies. (Seminar)

**647 Seminar in Research Methods: Rhetoric and Composition Studies (3)**

Advanced practices in the theory and design of research projects, emphasizing qualitative and quantitative studies. May include archival research, teacher-research, ethnographies, case studies, interviews, surveys, experiments, and discourse analyses. (Seminar) Pre: graduate standing or permission of instructor.

**999 Methods of Teaching College Writing (0)**

Materials and multiple methods of teaching writing on the college level. Required of teaching assistants who will teach in the College Writing Program unless waived by the director of English graduate studies, the supervisor of teaching assistants, and the director of the College Writing Program. (Seminar)

# DIRECTORIES

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Joseph Hagen  
Pierre LaPerriere  
Thomas Rockett  
Daniel Ryan  
Solomon A. Solomon

## Senior Administration

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Michelle S. Curreri, M.A., Assistant to the President  
Catherine J. Sears, B.A., Executive Assistant II  
Andrea Hopkins, B.A., Assistant Vice President of Public Affairs  
Abu Bakr, M.S., M.B.A., Co-Director Planning Services and Professional Development and Executive Assistant to the President  
Ann Morrissey, M.Ed., Co-Director Planning Services and Professional Development and Executive Assistant to the President  
Louis J. Saccoccio, J.D., Legal Counsel  
Robert E. Gillis, M.S., Director, Affirmative Action, Equal Opportunity and Diversity  
Roxanne Gomes, M.A., Assistant Director, Affirmative Action, Equal Opportunity and Diversity

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Clifford H. Katz, Ph.D., Assistant Provost  
Garrett A. Bozylinsky, M.A., Vice Provost for Information Technology Services  
John H. McCray Jr., Ph.D., Vice Provost for Urban Programs  
Lynn Pasquerella, Ph.D., Vice Provost for Academic Affairs and Dean of the Graduate School

### Office of Research and Outreach

Peter Alfonso, Ph.D., Vice President for Research and Economic Development

### Administration

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J. Vernon Wyman, B.S., Assistant Vice President for Business Services  
Anne Marie Coleman, J.D., Assistant Vice President for Human Resources  
Sharon B. Bell, B.S., C.P.A., Controller  
Linda Barrett, B.S., Director of the Budget and Financial Planning  
Liliana Costa, B.A., Assistant to Vice President  
Maria DiSano, B.S., Internal Auditor  
Thomas Mitchell, M.C.P., Director, W. Alton Jones Campus  
Joseph Pittle, M.S., Manager, Conference and Special Program Development

### Student Affairs

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Thorr D. Bjorn, M.Ed., Director of Athletics  
Fran Cohen, M.A., Assistant Vice President, Student Affairs and Dean of Students  
Kathleen Gianquitti, R.D., M.S., Director of Dining Services  
Chad Henderson, M.B.A., Director of Health Services  
Bruce Hamilton, M.S., Director of Memorial Union and Student Involvement  
Jodi R. Hawkins, M.S., Assistant Director, Intramurals and Recreation  
Roberta Koppel, Ph.D., Director of Career Services  
Robert M. Samuels, Psy.D., Director of Counseling Center  
Melvin Wade, M.A., Director of Multicultural Center  
Paul Whitney, B.A., Director of University Bookstore  
Gerald Williams, M.A., Director of Special Programs and Talent Development  
Andrew Winters, M.S., Assistant to the Vice President for Student Affairs and Gay, Lesbian, Bisexual, and Transgender Programs  
Chip Yensan, M.A., M.B.A., Assistant Vice President of Student Affairs and Director of Housing and Residential Life

### University Advancement

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Linda A. Acciardo, B.A., Director of Communications  
Sarah Howard, B.S., Director of Annual Giving  
Michele A. Nota, M.S., Executive Director of Alumni Relations  
Mary Patty, B.A., Director of Publications  
John Peltier, B.S., Manager of Advancement Services  
Trueson Tarinelli, M.A., Interim Director of Athletic Development

## Faculty (as of July 9, 2007)

### Faculty Emeriti

★Denotes graduate faculty

Abusamra, Ward, M.A., *Professor of Music*  
Abushanab, Elie, Ph.D., *Professor of Biomedical Sciences*  
★Ageloff, Roy, Ph.D., *Associate Professor of Management Science*  
Albert, Luke S., Ph.D., *Professor of Botany*  
★Alexander, Lewis M., Ph.D., *Professor of Geography*  
Allen, Anthony J., Ph.D., *Associate Professor of Education*  
Alton, Aaron J., Ph.D., *Professor of Marketing*  
★Anderson, Judith L., Ph.D., *Professor of Communication Studies and Women's Studies*  
Baer, Nadine, B.S., *Associate Professor, Library Studies*  
Bailey, Richard E., Ph.D., *Professor of Communication*  
Bancroft, J. Whitney, Ph.D., *Assistant Professor in Cooperative Extension*  
Barden, Martha, M.S., *Assistant Professor of Nursing*  
★Barnett, Harold, Ph.D., *Professor of Economics*  
Batrourkha, M. Dean, Ph.D., *Professor of Journalism*  
★Beckman, Carl H., Ph.D., *Professor of Plant Sciences*  
★Bloomquist, Lorraine E., Ed.D., *Professor of Physical Education*  
Bond, Howard W., Ph.D., *Professor of Medicinal Chemistry*  
★Boothroyd, Geoffrey, Ph.D., *Professor of Industrial and Manufacturing Engineering*  
Bowman, Beverly Hosbrook, M.S., *Associate Professor of Marketing*  
Brainard, Calvin H., Ph.D., *Professor of Finance and Insurance*  
Brittingham, Barbara, Ph.D., *Dean, College of Human Science and Services and Professor of Education*  
Bromley, James Donald, Ed.D., *Professor of Resource Development Education*  
Brown, Barbara S., M.A., *Associate Professor of Dental Hygiene*  
★Brown, James Henry Jr., D.F., *Professor of Natural Resources Science*  
★Brown, Phyllis R., Ph.D., *Professor of Chemistry*  
★Bumpus, Marguerite J., Ed.D., *Professor of Education*  
★Burke, Sally F., Ph.D., *Professor of English and Women's Studies*  
Burns, Donald B., M.A., *Professor of Music*  
★Cabelli, Victor J., Ph.D., *Professor of Biochemistry, Microbiology, and Molecular Genetics*  
Caddick, Jack W., M.S., *Associate Professor of Plant and Soil Science*  
Cain, Joseph Lambert, *Professor of Art*  
Cain, Matene Rachotes, *Professor of Art*  
Calabro, Richard P., M.F.A., *Professor of Art*

Caldwell, Marjorie J., Ph.D., Professor of Nutrition and Food Science

Caldwell, Winifred A., M.A., Associate Professor of Speech Communication

Cameron, Lucille W., M.L.S., Dean of Libraries and Associate Professor in the Library

★Campbell, Norman A., Ph.D., Professor of Pharmacy Administration

★Cane, Walter, Ph.D., Associate Professor of English

★Carney, Edward J., Ph.D., Professor of Computer Science and Statistics

Caroselli, Nestor E., Ph.D., Professor of Botany

Carpenter, Philip Lewis, Ph.D., Professor of Microbiology

★Carrano, Frank M., Ph.D., Professor of Computer Science

Casey, James Edward, Ed.D., Professor of Education

Castro, Concepcion I., Ed.D., Associate Professor of Nursing

Ceo, Joseph S., D.M.A., Professor of Music

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★Chartier, Armand B., Ph.D., Professor of French

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★Coates, Norman, Ph.D., Professor of Management

★Cobb, J. Stanley, Ph.D., Professor of Biological Sciences

★Cohen, Greta L., Ed.D., Professor of Physical Education and Exercise Science and Women's Studies

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★Costantino, Robert F., Ph.D., Professor of Biological Sciences

Cooper, Constance E., M.S., Assistant Professor of Human Development, Counseling, and Family Studies

Cosgrove, Clifford J., Ph.D., Professor of Food Science and Nutrition

Crandall, Elizabeth, Ed.D., Dean of the College of Home Economics and Professor of Home Management

★Croasdale, William, Ed.D., Professor of Education

Crocker, Walter A., Ed.D., Dean, Alan Shawn Feinstein College of Continuing Education

Crooker, Jeannette E., M.S., Associate Professor of Physical Education

★Cruickshank, Alexander Middleton, Ph.D., Professor of Chemistry

★Cuddy, Lois, Ph.D., Professor of English and Women's Studies

★Datta, Dilip K., Ph.D., Professor of Mathematics

★deLodzia, George, Ph.D., Professor of Management

DelSanto, Frank, Ed.D., Associate Professor of Physical Education, Health, and Recreation

★DeLuise, Frank, M.S., Professor of Mechanical Engineering and Applied Mechanics

★Desjardins, John Scott, Ph.D., Professor of Physics

★Devlin, L. Patrick, Ph.D., Professor of Communication Studies

Doctor, Wilbur L., Professor of Journalism

★Doody, Agnes G., Ph.D., Professor of Communication Studies

Dornberg, Otto, Ph.D., Professor of Languages

Dowdell, Rodger B., Ph.D., Professor of Mechanical Engineering and Applied Mechanics

★Driver, Rodney D., Ph.D., Professor of Mathematics

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Dunnington, John F., M.L.A., Associate Professor of Landscape Architecture

Durfee, Wayne K., Ph.D., Professor of Fisheries, Animal and Veterinary Science

Dymsza, Henry A., Ph.D., Professor of Food Science and Nutrition

★Emery, Joy Spanabel, M.A., Professor of Theatre

Eshleman, Ruth E., Ed.D., Associate Professor of Food Science and Nutrition

Etchingham, John B., M.L.S., Associate Professor in the Library

Feeney, Marian S., M.S., Professor of Resource Economics

Felbeck, George F., Ph.D., Professor of Natural Resources Science

★Feld, Marcia, Ph.D., Professor of Community Planning and Area Development

★Ferrante, William Robert, Ph.D., Justin Smith Morrill University Professor, and Professor of Mechanical Engineering and Applied Mechanics

★Findlay, James F., Jr., Ph.D., Professor of History

★Fisher, Harold, W., Ph.D., Professor of Chemistry and Microbiology

Fitzelle, George T., Ph.D., Professor of Human Development

★Fortin, Jacqueline D., D.N.Sc., Associate Professor of Nursing

★Foster, Howard H., Jr., Ph.D., Associate Professor of Community Planning and Area Development

Fraenkel, Richard O., M.F.A., Professor of Art

★Fraleigh, John Blackmon, M.A., Professor of Mathematics

★Fuchs, Henry Carl, M.Mus., Professor of Music

Gaines, Abner, M.A., Associate Professor in the Library

Garey, Marion A., Ed.D., Associate Professor of Nursing

★Gersuny, Carl, Ph.D., Professor of Sociology

★Gibbs, Geoffrey D., D.M.A., Professor of Music

Gilbert, Roland W., M.S., Assistant Professor of Natural Resources Science

Goertemiller, C. Christian, Ph.D., Professor of Zoology

Goff, Robert H., M.S., Associate Dean of the College of Engineering, and Professor of Mechanical Engineering and Applied Mechanics

★Goodman, Leon, Ph.D., Professor of Chemistry

★Goos, Roger D., Ph.D., Professor of Botany

Gould, Walter Philip, Ph.D., Associate Professor of Natural Resources Science

Grady, Ethyl R., M.S., Associate Research Professor of Home Economics

Grebstein, Lawrence C., Ph.D., Professor of Psychology

Greene, Helen Finch, Ph.D., Associate Professor of Human Development, Counseling, and Family Studies

Griffiths, Albert E., Ph.D., Associate Professor of Plant and Soil Science

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Gunning, Thomas J., Ed.D., Associate Professor of Human Development, Counseling, and Family Studies

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Haas, Robert S., M.S., Professor of Electrical Engineering

Hagist, Warren M., M.E., Professor of Mechanical Engineering

Hammen, Carl S., Ph.D., Professor of Zoology

Hanson, Richard E., M.L.A., Professor of Community Planning and Landscape Architecture

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Hatch, John Palmer, M.S., Professor of Mechanical Engineering and Applied Mechanics

Hauke, Richard L., Ph.D., Professor of Botany

Heisler, Walter Christoff, Ed.D., Professor of Education

★Helms, Patricia Ann, Ph.D., Associate Professor of Textiles, Fashion Merchandising, and Design

Hemmerle, William, Ph.D., Professor of Computer Science and Statistics

Henderson, Bancroft W., Jr., M.S., Associate Professor of Animal and Veterinary Science

Henni, Geza A., M.A., Assistant Professor of Physical Education

★Higa, Misako, Ph.D., Professor of Textiles, Fashion Merchandising, and Design

★Hills, Mathilda M., Ph.D., Associate Professor of English and Women's Studies

Hindle, Robinson J., Ph.D., Professor of Plant Sciences

★Hirsch, Janet I., Ed.D., Professor of Nursing

Holmes, Wendy B., Ph.D., Professor of Art

Holmsen, Andreas A., Ph.D., Professor of Resource Economics

Houston, Chester W., Ph.D., Professor of Microbiology and Director of Medical Technology

Howard, Frank, Ph.D., Professor of Plant Pathology-Entomology

★Hull, Richard J., Ph.D., Professor of Plant Sciences

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Hyland, Jean S., Ph.D., Associate Professor of Languages

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Jagschitz, John A., M.S., Associate Professor of Plant Sciences

★Jeffries, Harry Perry, Ph.D., Professor of Oceanography

★Jensen, Marjorie E. (Munafo), M.S., Associate Professor of Community Planning and Area Development

★Johnson, Eugene M., D.B.A., Professor of Marketing

Johnson, Karl E., M.L.S., Associate Professor, Library Kaiman, Evelyn, M.A., Associate Professor in Cooperative Extension

Kellogg, Martha H., M.S.L.S., Associate Professor in the Library

★Kellogg, Theodore M., Ph.D., Professor of Education

Kelly, Patricia S., Ph.D., Professor of Home Economics Education

Kelly, William F., Ed.D., Professor of Education

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★Kim, Hesook Suzie Ph.D., Professor of Nursing

★Kim, Yong Choon, Ph.D., Professor of Philosophy  
 ★Knauss, John A., Ph.D., Dean of the Graduate School of Oceanography and Professor of Oceanography  
 Kossoff, Ruth Horne, Ph.D., Professor of Spanish  
 Kovacs, William D., Ph.D., Professor of Civil and Environmental Engineering  
 Kowalski, Tadeusz, Ph.D., Professor of Ocean Engineering  
 ★Krausse, Gerald H., Ph.D., Associate Professor of Marine Affairs  
 Krausse, Sylvia C., M.L.S., Professor, Library  
 ★Krueger, William H., Ph.D., Associate Professor of Zoology  
 ★Krus, William R., Ph.D., Associate Professor of Plant Sciences  
 Kuhn, Ira A., Ph.D., Associate Professor of French  
 ★Kumekawa, Glenn, M.A., Director of Intergovernmental Policy Analysis Program and Professor of Community Planning and Area Development  
 ★Kunz, Don R., Ph.D., Professor of English  
 Kupa, John J., Ph.D., Associate Professor of Community Planning and Area Development  
 Langdon, Mary L., Associate Professor of Music  
 Lapin, Sylvia, M.A., Associate Professor of Human Development, Counseling, and Family Studies  
 ★Laviano, Andrew, J.D., Professor of Business Law  
 Lawing, William D., Ph.D., Professor of Industrial Engineering and Statistics  
 Lawton, Gussie R., M.A., Associate Cooperative Extension Professor  
 Leathers, Roger K., D.P.E., Associate Professor of Physical Education  
 ★Leduc, Edgar Clarence, Ph.D., Professor of Political Science  
 Leete, William W., M.F.A., Professor of Art  
 ★Leinen, Margaret S., Ph.D., Vice Provost for Marine and Environmental Programs and Dean of the Graduate School of Oceanography and Professor of Oceanography  
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 ★Lindgren, Allen G., Ph.D., Professor of Electrical Engineering  
 ★Long, John V., Jr., Ph.D., Professor of Education  
 ★Lott, Albert J., Ph.D., Professor of Psychology and Women's Studies  
 ★Lott, Bernice, Ph.D., Professor of Psychology and Women's Studies  
 ★MacKenzie, Scott, Ph.D., Professor of Chemistry  
 ★MacLaine, Allan H., Ph.D., Professor of English  
 ★MacMillan, Robert W., Ph.D., Professor of Education  
 Malina, Marilyn J., Ph.D., Associate Professor of English  
 Mandell, Barbara, M.A., Associate Professor of Physical Education, Health, and Recreation  
 Marcus, Alan Samuel, Ph.D., Associate Professor of Civil and Environmental Engineering  
 Marshall, Nelson, Ph.D., Professor of Oceanography and Marine Affairs  
 Massey, M. Dorothy, Ed.D., Professor of Physical Education, Health, and Recreation  
 Mathews, Francis X., Ph.D., Professor of English  
 Maynard, Peter E., Ph.D., Professor of Human Development and Family Studies  
 McCabe, Thomas H., Ph.D., Associate Professor of English  
 McCreight, Donald E., Ph.D., Professor of Fisheries, Animal and Veterinary Science  
 McElravy, Olive JoAnn, M.S., Associate Professor of Nursing  
 McEwen, Everett E., D.Eng., Professor of Civil and Environmental Engineering  
 McGuire, Margaret, R.N., D.N.Sc., Professor of Nursing  
 McGuire, John J., Ph.D., Professor of Plant Sciences  
 McGuire, Marion L., Ph.D., Professor of Education  
 McKiel, Charles G., M.S., Associate Professor of Natural Resources Science  
 ★McLeavey, Dennis W., D.B.A., Professor of Finance and Insurance  
 ★McNab, Gregory R., Jr., Ph.D., Professor of Portuguese  
 ★Merenda, Peter F., Ph.D., Professor of Psychology  
 Metz, William DeWitt, Ph.D., Professor of History  
 Middleton, Foster H., Dr. Eng., Professor of Ocean Engineering  
 Milburn, Josephine F., Ph.D., Professor of Political Science  
 Millar, Richard I., M.S., Associate Professor of Fisheries, Animal and Veterinary Science  
 Miller, Jordan, Ph.D., Professor of English  
 ★Miller, Robert H., Ph.D., Professor of Natural Resources Science  
 ★Mitra, Shashanka S., Ph.D., Professor of Electrical Engineering  
 ★Mojena, Richard, Ph.D., Professor of Management Science and Information Systems  
 Morse, Kenneth T., M.S.L.S., Associate Professor, Library  
 Mottinger, John P., Ph.D., Associate Professor of Biological Sciences and of Cell and Molecular Biology  
 ★Mueller, Walter C., Ph.D., Professor of Plant Sciences  
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 ★Napora, Theodore, Ph.D., Associate Professor of Oceanography  
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 Nippo, Murn M., Ph.D., Professor of Fisheries, Animal and Veterinary Science  
 Noring, Franziska Eleanor, Ph.D., Assistant Professor of Consumer Studies and Human Development and Family Studies  
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 O'Donnell, Leo E., Ed.D., Associate Professor of Physical Education  
 ★O'Leary, John Louis, M.S., Associate Professor of Physical Education and Exercise Science  
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 Parker, John, M.S., Associate Professor of Mechanical Engineering and Applied Mechanics  
 Pascale, Alfred C., Ed.D., Associate Professor of Human Development, Counseling, and Family Studies  
 Patric, Earl F., Ph.D., Associate Dean of the College of Resource Development and Professor of Natural Resources Science  
 Pearlman, Daniel D., Ph.D., Professor of English  
 Peck, Austin, J.D., Associate Professor of Business Law  
 Penhallow, William S., M.S., Professor of Physics  
 Petrie, Paul J., Ph.D., Professor of English  
 ★Pickart, Stanley J., Ph.D., Professor of Physics  
 ★Pilson, Michael E.Q., Ph.D., Professor of Oceanography  
 Pitterman, Marvin, Ph.D., Professor of Finance and Insurance  
 ★Polidoro, J. Richard, D.P.E., Professor of Physical Education and Exercise Science  
 ★Poon, Calvin Po-Chuen, Ph.D., Professor of Civil and Environmental Engineering  
 Potter, Nancy A., Ph.D., Professor of English  
 Prince, Mack J., M.S., Associate Professor of Electrical Engineering  
 ★Quinn, James G., Ph.D., Professor of Oceanography  
 ★Rae, Gwenneth, Ed.D., Professor of Human Development and Family Studies  
 ★Rahn, Kenneth A., Ph.D., Professor of Oceanography  
 ★Rand, Arthur Garth, Jr., Ph.D., Professor of Food Science and Nutrition  
 ★Rankin, W. Donald, D.M.A., Professor of Music  
 ★Rayack, Elton, Ph.D., Professor of Economics  
 ★Reaves, R.B., Jr., Ph.D., Associate Professor of English  
 ★Reilly, Mary Ellen, Ph.D., Professor of Women's Studies and Sociology  
 ★Rhodes, Christopher T., Ph.D., Professor of Biomedical and Pharmaceutical Sciences  
 Robinson, Claire S., M.A., Associate Professor of Physical Education  
 Rockett, Sarah, M.S., Assistant Dean, University College  
 ★Rockett, Thomas J., Ph.D., Vice Provost for Graduate Studies, Research, and Outreach, and Professor of Chemical Engineering  
 Rohm, Robert, M.F.A., Professor of Art  
 Rorholm, Niels, Ph.D., Professor of Resource Economics  
 ★Rose, Vincent C., Ph.D., Professor of Nuclear and Chemical Engineering  
 Rosengren, William R., Ph.D., Professor of Sociology and Anthropology  
 ★Rosie, Douglas M., Ph.D., Assistant Provost and Professor of Chemistry  
 ★Roxin, Emilio O., Ph.D., Professor of Mathematics  
 Russell, Thomas G., B.S., Associate Professor of Physical Education for Men  
 ★Russu, Francis Xavier, Ph.D., Professor of Education  
 ★Sadasiv, Angaraith Ganesan, Ph.D., Professor of Electrical Engineering  
 ★Saila, Saul B., Ph.D., Professor of Oceanography and Zoology  
 Salvatore, Lucy V., M.S.L.S., Associate Professor of Library Science  
 Saunders, Sandra D., M.P.H., Associate Professor of Human Development and Family Studies  
 Schaffran, Jerome A., Ph.D., Professor of Human Development and Family Studies  
 ★Schilling, Jean-Guy, Ph.D., Professor of Oceanography

★Schmidt, Charles T., Jr., Ph.D., Professor of *Industrial Relations*

★Schmieding Norma Jean, Ed.D., Professor of *Nursing*

Schoonover, Eric Thomas, A.M., Associate Professor of *English*

★Schroeder, Karen A., Ph.D., Associate Professor of *Human Development and Family Studies and of Women's Studies*

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Schurman, Bernard, Ph.D., Professor of *Economics*

Schwarz, Stephen D., Ph.D., Professor of *Philosophy*

★Schwartzman, Solomon, Ph.D., Professor of *Mathematics*

★Sleean, Diana Rae, Ed.D., Associate Professor of *Physical Education and Exercise Science*

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Sharif, Mohammed, Ph.D., Professor of *Economics*

★Shaw, Richard J., Ph.D., Associate Professor of *Plant Sciences*

Sheehan, James E., M.S., Associate Professor of *Natural Resources Science*

Sheets, Herman E., Dr. Tech. Sci., Professor of *Ocean Engineering*

Shen, Randolph, Ph.D., Professor of *Management*

Sheridan, Jean, M.L.S., Associate Professor in the *Library*

Sherman, Arthur L., Ed.D., Associate Professor of *Physical Education*

Shimizu, Yuzuru, Ph.D., Professor of *Biomedical and Pharmaceutical Sciences and of Chemistry*

Sieburth, Janice F., M.L.S., Professor, *Library*

★Sigurdsson, Haraldur, Ph.D., Professor of *Oceanography*

★Sillanpoa, Wallace, P., Ph.D., Professor of *Italian*

★Silva, Armand J., Ph.D., Professor of *Civil and Ocean Engineering*

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★Silvestri, Gino, Ph.D., Assistant Professor of *History*

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Simpson, Kenneth L., Ph.D., Professor of *Food Science and Nutrition*

Smart, Mollie S., Ph.D., Professor of *Child Development and Family Relations*

Smith, Kathleen F., Ed.D., Associate Professor of *Management*

Smith, Lewis T., Ph.D., Professor of *Fisheries, Aquaculture, and Pathology*

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Spaulding, Irving A., Ph.D., Professor of *Resource Economics and Rural Sociology*

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Stich, Jane, M.B.A., Assistant Dean, *College of Business Administration*

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★Suryanarayanan, E. Ramnath, Ph.D., Professor of *Mathematics*

★Swift, Elijah, Ph.D., Professor of *Oceanography and Biological Sciences*

Taggart, David G., M.Ed., Dean of *Admissions*

Tate, Barbara, Ed.D., Dean of the *College of Nursing and Professor of Nursing*

Test, Frederick L., Ph.D., Professor of *Mechanical Engineering*

Thompson, Jack, M.S., Associate Professor of *Journalism*

★Traficante, Daniel D., Ph.D., Professor of *Chemistry*

★Traxler, Richard W., Ph.D., Professor of *Food Science and Nutrition and of Biochemistry, Microbiology, and Molecular Genetics*

★Tremblay, George C., Ph.D., Professor of *Biochemistry, Microbiology, and Molecular Genetics*

★Trivelli, Remo J., D.M.L., Professor of *Italian*

★Turnbaugh, William A., Ph.D., Professor of *Anthropology*

★Tutt, Ralph M., Jr., Ph.D., Professor of *English*

★Twombly, Saran, Ph.D., Professor of *Biological Sciences*

★Tyrrell, Timothy J., Ph.D., Professor of *Environmental and Natural Resource Economics*

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Velletri, Andrew, M.S., Associate Professor of *Mechanical Engineering*

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★Verma, Ghans Ram, Ph.D., Professor of *Mathematics*

Viets, Hermann, Ph.D., Dean of the *College of Engineering*

★Vigliorino, Paschal, Ph.D., Professor of *Italian*

★Vosburgh, William T., Ph.D., Professor of *Psychology*

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Waters, Harold A., Ph.D., Professor of *French*

Weeden, Patricia J., M.S., Associate Professor of *Textiles, Fashion Merchandising, and Design*

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White, Sidney H., Ph.D., Professor of *English*

Willis, Jack, M.S., Professor of *Physics*

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Wilson, Philip Hempstead, M.S., Associate Professor of *Plant Science*

Wing, Richard A., M.A., Associate Professor of *Fisheries, Animal and Veterinary Science*

★Wolke, Richard E., Ph.D., Professor of *Fisheries, Animal and Veterinary Science*

Wood, Porter Shelley, M.A., C.P.A., Professor of *Accounting*

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Worthen, Leonard R., Ph.D., Associate Dean of *Pharmacy and Professor of Pharmacognosy*

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Yates, Vance J., Ph.D., Professor of *Animal and Veterinary Science*

★Yoder, James A., Ph.D., Professor of *Oceanography*

★Young, William, Th.D., Professor of *Philosophy*

Zipkowitz, Fay, D.A., Professor of *Library and Information Studies*

## Faculty

★Denotes graduate faculty

First date after title indicates appointment to present position; the second date, when the first fails to do so, indicates first appointment in the University.

★Aberdam, Eliane M., Assistant Professor of *Music*, 2004, 2001, B.A., 1988, Rubin Academy of *Music and Dance*, Jerusalem, Israel; M.A., 1992, University of Pennsylvania, Philadelphia; Ph.D., 1998, University of California, Berkeley.

Accetta, David A., Assistant Professor of *Military Science and Leadership*, 1996, B.A., 1987, University of Rhode Island.

★Adams, Jerome F., Professor of *Human Development and Family Studies*, 2000, 1989, B.A., 1968, M.A., 1970, University of Windsor; Ph.D., 1989, Purdue University.

Adams, Suellen, Assistant Professor of *Library and Information Studies*, 2007, B.A., 1977, Upper Iowa University; M.A.L.S., 1988, University of Wisconsin, Madison; Ph.D., 2006, University of Texas.

Adams-Labonte, Sue, K., Assistant Professor of *Human Development and Family Studies*, 2007, B.A., 2001, Wheaton College; M.A., 2004, Ph.D., 2007, University of Massachusetts, Boston.

★Adamy, Peter H., Associate Professor of *Education*, 2005, 1999, B.A., 1988, Stanford University; M.A., 1994, University of California, Berkeley; Ph.D., 1999, University of Virginia.

★Adkins, Jeffrey A., Assistant Professor of *Plant Sciences*, 2004, B.S., 1998, M.S., 2001; Ph.D., 2004, North Carolina State University.

★Agostinucci, James, Associate Professor of *Physical Therapy*, 1995, 1992, B.S., 1975, D.Sci., 1988, Boston University.

★Akhlaghi, Fatemeh, Associate Professor of *Biomedical and Pharmaceutical Sciences*, 2006, 2000, Pharm. D., 1990, Ferdousi University of Mashhad, Iran; Ph.D., 1996, University of Sydney, Australia.

Alfonso Peter, Vice President for *Research and Economic Development* and Professor of *Communicative Disorders*, 2007, B.A., 1972, University of Connecticut; M.A., 1973, Western Michigan University; Ph.D., 1977, Purdue University.

★Alm, Steven R., *Professor of Plant Sciences*, 1999, 1987. B.S., 1976, M.S., 1979, State University of New York, College of Environmental Science and Forestry; Ph.D., 1985, Ohio State University.

★Amador, Jose A., *Professor of Natural Resources Science*, 2001, 1992. B.S., 1982, M.S., 1986, Ph.D., 1990, Cornell University.

Anderson, Benjamin R., *Assistant Professor of Art and Art History*, 2007. B.F.A., 1984, Rhode Island School of Design; M.F.A., 1992, University of California, San Diego.

★Anderson, Christopher M., *Associate Professor of Environmental and Natural Resource Economics*, 2006, 2000. B.S., 1996, Brown University; Ph.D., 2000, California Institute of Technology.

★Anderson, James L., *Professor of Environmental and Natural Resource Economics*, 1994, 1983. B.S., 1976, College of William and Mary; M.S., 1978, University of Arizona; Ph.D., 1983, University of California, Davis.

★Anderson, Joan Gray, *Professor of Consumer Studies and Human Development and Family Studies*, 1997, 1984. B.S., 1971, University of Massachusetts; M.S., 1975, Cornell University; Ph.D., 1984, University of California, Davis.

★Arakelian, Paul G., *Professor of English*, 1993, 1976. B.A., 1969, California State University, Los Angeles; Ph.D., 1975, Indiana University.

Archambault, Raoul, *Professor of Military Science and Leadership*, 1995. B.S., 1979, State University of New York, Albany; M.A., 1980, Central Michigan University; M.A., 1991, Salve Regina University; M.A., 1991, Naval War College.

★Aronian, Sona, *Professor of Russian and Women's Studies*, 1987, 1970. A.B., 1960, Boston University; Ph.D., 1971, Yale University.

★Atash, Farhad, *Professor of Community Planning and Area Development*, 1999, 1985. B.S., 1976, M.S., 1978, Tehran University; MRCP, 1981, Kansas State University; Ph.D., 1986, Rutgers-The State University of New Jersey.

★August, Peter V., *Professor of Natural Resources Science and Director of Coastal Institute*, 1995, 1989. B.S., 1974, University of San Diego; M.S., 1976, Texas Tech University; Ph.D., 1981, Boston University.

★Babson, John R., *Associate Professor of Biomedical and Pharmaceutical Sciences and Cell and Molecular Biology*, 1992, 1988. B.A., 1975, University of Massachusetts; Ph.D., 1980, Oregon State University.

Baglama, James, *Associate Professor of Mathematics*, 2007.

Bajcz, William J. Jr., *Assistant Professor of Military Science and Leadership*, 2000. B.A., 1989, Slippery Rock University.

★Ballard, Robert D., *Professor of Oceanography*, 2002. B.S., 1965, University of California, Santa Barbara; Ph.D., 1974, University of Rhode Island.

★Barber, Stephen M., *Associate Professor of English*, 2003, 1997. B.A., 1988, Trent University; M.A., 1990, Carleton University, Ottawa; Ph.D., 1995, York University.

Barbour, Marilyn McFarland, *Professor of Pharmacy Practice*, 1997, 1983. Pharm.D., 1982, University of California, San Francisco.

Barnett, Judith B., *Professor, Library*, 1992, 1971. A.B., 1959, Barnard College; M.I.S., 1962, Drexel University.

★Barnett, Stanley M., *Professor of Chemical Engineering, Food Science and Technology, and Pharmaceutics*, 1980, 1969. B.A., 1957, Columbia College; B.S., 1958, Columbia University; M.S., 1959, Lehigh University; Ph.D., 1963, University of Pennsylvania.

★Baudet, Gerard M., *Associate Professor of Computer Science*, 1987. Eng. Deg., 1970, Ecole Polytechnique, Doctorat, 1973, University of Paris VI; Ph.D., 1978, Carnegie Mellon University.

Baumhover, Lisa, *Adjunct Instructor of Nursing*, 2007. M.S., 2000, University of Rhode Island.

★Baxter, Christopher D.P., *Associate Professor of Ocean Engineering and Civil and Environmental Engineering*, 2007, 2000. B.S., 1990, Tufts University; M.S., 1994, Purdue University; Ph.D., 1999, Virginia Polytechnic Institute and State University.

★Beauregard, Raymond A., *Professor of Mathematics*, 1982, 1968. A.B., 1964, Providence College; M.S., 1966, Ph.D., 1968, University of New Hampshire.

★Beauvais, Laura, *Professor of Management*, 1999, 1984. B.S., 1979, College of Charleston; Ph.D., 1987, University of Tennessee.

★Beckman, Judy K., *Associate Professor of Accounting*, 1998, 1992. B.S., 1981, Bentley College; Ph.D., 1991, Texas Tech University; C.P.A.

★Bengtson, David A., *Professor of Fisheries, Animal and Veterinary Science*, 2000, 1988. A.B., 1971, Boston University; M.S., 1974, Ph.D., 1982, University of Rhode Island.

Berger Cardany, Audrey, *Assistant Professor of Music*, 2005. B.M., 1989, University of Wyoming; M.M., 1999, University of Nevada, Reno; D.M.A., 2004, Arizona State University.

★Berman, Allan, *Professor of Psychology*, 1976, 1968. B.A., 1962, University of Massachusetts; M.Ed., 1963, Boston University; Ph.D., 1968, Louisiana State University.

★Betensky, Carolyn, *Assistant Professor of English*, 2004. B.A., 1984, Barnard College; M.A., 1989, M.Phil., 1992, Ph.D., 1997, Columbia University.

★Bibb, Harold D., *Associate Dean of the Graduate School and Professor of Biological Sciences*, 1995, 1978. B.A., 1962, Knox College; M.S., 1964, Ph.D., 1969, University of Iowa.

★Bide, Martin J., *Professor of Textiles, Fashion Merchandising, and Design*, 1997, 1991. B.Tech., 1974, Ph.D., 1979, University of Bradford, United Kingdom.

★Biller, Henry B., *Professor of Psychology*, 1975, 1970. A.B., 1962, Brown University; Ph.D., 1967, Duke University.

★Blanpied, Peter R., *Professor of Physical Therapy*, 2007, 1989. B.S., 1979, Ithaca College; M.S., 1982, University of North Carolina; Ph.D., 1989, University of Iowa.

Blanthorne, Cynthia, *Assistant Professor of Business Administration*, 2007. B.A., 1990, New Mexico State University; M.T., 1995, Ph.D., 2000, Arizona State University.

★Blissmer, Bryan J., *Associate Professor of Kinesiology*, 2005, 2000. B.S., 1996, University of Illinois; M.S., 1997, Miami University, Ohio; Ph.D., 2000, University of Illinois.

★Boatright-Horowitz, Susan L., *Associate Professor of Psychology*, 2005, 2000, 1992. B.S., 1979, Virginia Polytechnic Institute; Ph.D., 1992, City University of New York.

★Bodah, Matthew M., *Associate Professor of Labor and Industrial Relations and Coordinator of Research, Labor Research Center*, 2002, 1992. B.A., 1985, Providence College; M.S., 1988, University of Rhode Island; Ph.D., 1996, Michigan State University.

★Boothroyd, Jon C., *Professor of Geosciences*, 1986, 1975. B.A., 1962, University of New Hampshire; M.S., 1972, University of Massachusetts; Ph.D., 1974, University of South Carolina.

★Bose, Arijit, *Professor of Chemical Engineering*, 1992, 1982. B.Tech., 1976, Indian Institute of Technology; Ph.D., 1981, University of Rochester.

Bothun, Geoffrey D., *Assistant Professor of Chemical Engineering*, 2006. B.S., 1998, University of Nevada, Reno; M.S., 2001, Ph.D., 2006, University of Kentucky.

★Boudreault-Bartels, Gloria F., *Professor of Electrical Engineering*, 1993, 1983. B.S., 1974, University of Southwestern Louisiana; M.S., 1980, Ph.D., 1983, Rice University.

★Boulmetis, John, *Professor of Education*, 1997, 1977. B.A., 1971, M.A., 1973, University of Rhode Island; Ph.D., 1982, Ohio State University.

★Boving, Thomas B., *Associate Professor of Geosciences*, 2005, 1999. B.S., 1989, Diplom., 1993, University of Tübingen, Germany; Ph.D., 1999, University of Arizona.

★Bovy, Kristine M., *Assistant Professor of Anthropology*, 2006. B.S., 1993, University of Wisconsin, Madison; M.A., 1998, Ph.D., 2005, University of Washington.

★Boyle, Edmund J., *Associate Professor of Accounting*, 1994, 1988. B.S., 1976, Boston College; M.B.A., 1979, Northeastern University; Ph.D., 1990, Pennsylvania State University; C.P.A. (New York).

★Bradley, Terence M., *Professor of Fisheries, Animal and Veterinary Science and of Cell and Molecular Biology*, 1996, 1983. B.S., 1977, St. John's University; M.S., 1979, University of Rhode Island; Ph.D., 1983, University of Idaho.

★Brady, Susan A., *Professor of Psychology*, 1995, 1989. B.A., 1970, Miami University; M.A., 1972, Ph.D., 1975, University of Connecticut.

★Branch, Katherine B., *Associate Professor of Human Development and Family Studies*, 2003, 1997. B.A., 1984, M.A., 1987, Ohio State University; Ph.D., 1997, Indiana University.

★Brown, Christopher W., *Professor of Chemistry*, 1976, 1968. B.S., 1960, M.S., 1962, Xavier University; Ph.D., 1967, University of Minnesota.

Brown, Deborah G., *Associate Professor of Nursing, 2005, 1979. B.S., 1971, Duke University; M.S., 1979, University of Rhode Island; M.A., 1985, Brown University.*

★Brown, Rebecca N., *Assistant Professor of Plant Sciences, 2005. B.A., 1991, St. Olaf College; M.S., 1994, University of Minnesota; Ph.D., 2001, Oregon State University.*

★Brown, Richard, *Professor of Materials and Chemical Engineering, 1991, 1981. B.Sc., 1974, University of Nottingham, England; Ph.D., 1977, University of Cambridge, England.*

★Brownell, Winifred E., *Dean of the College of Arts and Sciences and Professor of Communication Studies, 1989, 1977. B.A., 1967, M.A., 1970, Ph.D., 1973, State University of New York, Buffalo.*

★Budnick, Frank S., *Professor of Management Science, 1982, 1971. B.S., 1966, Rutgers-The State University of New Jersey; M.B.A., 1968, D.B.A., 1973, University of Maryland.*

★Bullock, Robert Craig, *Associate Dean of the College of Arts and Sciences and Professor of Biological Sciences, 1990, 1974. B.S., 1966, Gordon College; M.S., 1968, University of Maine; A.M., 1970, Ph.D., 1972, Harvard University.*

★Burbank, Patricia M., *Professor of Nursing, 2000, 1982. B.S., 1974, University of Rhode Island; M.S., 1975, D.N.Sc., 1988, Boston University.*

★Burkett, John P., *Professor of Economics, 1992, 1981. B.A., 1971, Cornell University; M.A., 1976, Ph.D., 1981, University of California, Berkeley.*

Burkhardt, Joanna M., *Professor, Library, 2007, 1992. B.A., 1975, M.A., 1981, University of Wisconsin, Madison; M.L.S., 1986, University of Rhode Island.*

★Burroughs, Richard, *Professor of Marine Affairs, 1995, 1989. B.S., 1969, Princeton University; Ph.D., 1975, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution.*

★Buxton, Bridget, *Assistant Professor of History and Oceanography, 2006. B.A., 1994, M.A., 1996, Victoria University of Wellington; Ph.D., 2003, University of California, Berkeley.*

★Byrd, David M., *Professor of Education, 1997, 1989. B.S., 1972, State University of New York, Brockport; M.A., 1976, State University of New York, Cortland; Ph.D., 1980, Syracuse University.*

★Cain, J. Allan, *Professor of Geosciences, 1971, 1966. B.Sc., 1958, University of Durham, U.K.; M.S., 1960, Ph.D., 1962, Northwestern University.*

Caldwell Naomi R., *Associate Professor of Library and Information Studies, 2007, 1999. B.S., 1980, Clarion State College; M.S.L.S., 1982, Clarion University of Pennsylvania; Ph.D., 2002, University of Pittsburgh.*

★Campbell, Josie P., *Professor of English, Alan Shaw Feinstein College of Continuing Education, and Women's Studies, 1985, 1972. B.A., 1965, Dickinson College; M.S., 1968, University of Rhode Island; Ph.D., 1972, Pennsylvania State University.*

★Cappello, Mary C., *Professor of English, 2001, 1991. B.A., 1982, Dickinson College; M.A., 1985, Ph.D., 1988, State University of New York, Buffalo.*

★Carey, Steven N., *Professor of Oceanography, 2000, 1987. B.S., 1975, University of Massachusetts; Ph.D., 1983, University of Rhode Island.*

Carothers, Robert L., *President and University Professor, 1991. B.S., 1965, Edinboro University; M.A., 1966, Ph.D., 1969, Kent State University; J.D., 1980, McDowell School of Law, University of Akron.*

★Carroll, Leo, *Professor of Sociology, 1982, 1972. A.B., 1963, Providence College; M.A., 1964, Fordham University; Ph.D., 1974, Brown University.*

★Carson, C. Herbert, *Professor of Library and Information Studies, 2007, 1986. B.S., 1968, State University College at Geneseo; M.S., 1973, Rochester Institute of Technology; M.L.S., 1976, Ph.D., 1988, Syracuse University.*

★Casagrande, Richard A., *Professor of Plant Sciences, 1989, 1976. B.S., 1969, Rutgers-The State University of New Jersey; M.S., 1972, Ph.D., 1975, Michigan State University.*

★Chandlee, Joel M., *Professor of Plant Sciences and of Cell and Molecular Biology, 2006, 1988. B.A., 1978, Rutgers-The State University of New Jersey; Ph.D., 1984, North Carolina State University.*

★Chelidze, David, *Associate Professor of Mechanical Engineering, 2005, 2000. M.S.E., 1992, Georgian Technical University; M.S., 1995, Southern Illinois University; Ph.D., 2000, Pennsylvania State University.*

★Chen, Guo-Ming, *Professor of Communication Studies, 2000, 1989. B.A., 1977, Chinese Culture University, Taiwan; M.A., 1983, University of New Mexico; Ph.D., 1987, Kent State University.*

★Chen, Shaw K., *Professor of Management Science and Information Systems, 1997, 1986. B.A., 1974, National Chechihi University; M.A., 1978, Taiwan University; Ph.D., 1988, University of Michigan.*

★Chichester, Clinton O., III, *Professor of Biomedical and Pharmaceutical Sciences, 2001, 1981. B.S., 1973, University of California, Riverside; M.S., 1977, Ph.D., 1980, University of Rhode Island.*

★Cho, Bongsup P., *Professor of Biomedical and Pharmaceutical Sciences, 2004, 1991. B.S., 1977, M.S., 1979, Yonsei University; Ph.D., 1985, University of Illinois.*

★Cicomascolo, Lori E., *Assistant Professor of Kinesiology, 2002. B.S., 1992, M.S., 1995, Southern Connecticut State University; Ed.D., 2001, Boston University.*

★Clark, Dean S., *Professor of Mathematics, 1995, 1984. B.A., 1965, Franklin and Marshall College; M.A., 1972, Brown University; M.S., 1974, University of Rhode Island; Ph.D., 1978, Brown University.*

★Clark, Phillip G., *Professor of Human Development and Family Studies, 1994, 1981. A.B., 1971, M.S., 1976, Sc.D., 1979, Harvard University.*

★Cohen, Jerry L., *Professor of Psychology, 1989, 1980. B.S., 1968, Pennsylvania State University; M.A., 1971, Ph.D., 1973, University of Illinois.*

★Cohen, Joel A., *Professor of History, 1979, 1965. B.A., 1960, University of Rhode Island; M.A., 1962, Ph.D., 1967, University of Connecticut.*

★Cohen, Paul Sidney, *Professor of Cell and Molecular Biology, 1975, 1966. A.B., 1960, Brandeis University; A.M., 1962, Ph.D., 1964, Boston University.*

★Cohen, Stewart, *Professor of Human Development and Family Studies, 1978, 1972. B.A., 1961, City College of New York; M.S., 1963, University of Oklahoma; Ph.D., 1967, Purdue University.*

Coiro, Julie E., *Assistant Professor of Education, 2007. B.S., 1989, University of Connecticut; M.Ed., 1993, University of New Orleans; Ph.D., 2007, University of Connecticut.*

★Collie, Jeremy S., *Professor of Oceanography, 2001, 1993. B.Sc., 1980, University of York, England; Ph.D., 1985, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution.*

★Collyer, Charles E., *Professor of Psychology, 1991, 1976. B.A., 1971, McMaster University; M.A., 1974, Ph.D., 1976, Princeton University.*

Comerford, Mark D., *Assistant Professor of Mathematics, 2006. B.S., 1992, University College, Dublin; Ph.D., 2001, Yale University.*

★Comerford, Robert A., *Professor of Management, 1985, 1975. B.A., 1970, M.B.A., 1972, Ph.D., 1976, University of Massachusetts.*

★Conley, Mark, *Associate Professor of Music, 2005, 2000, 1997. B.M., 1987, University of Illinois; M.M. (choral conducting), 1991, M.M. (vocal performance), 1991, University of Michigan.*

★Cooper, Elizabeth A., *Professor of Management, 1999, 1985. B.A., 1979, McGill University; M.A., 1983, Ph.D., University of Akron.*

★Cornillon, Peter C., *Professor of Oceanography, 1990, 1981. B.S., 1968, Ph.D., 1973, Cornell University.*

★Costa-Pierce, Barry A., *Professor of Fisheries, Animal and Veterinary Science and Director of Rhode Island Sea Grant, 2001. B.A., 1976, Drew University; M.S., 1980, University of Vermont; Ph.D., 1984, University of Hawaii.*

Costello, Barbara J., *Associate Professor of Sociology, 2003, 1999. B.A., 1986, University of Rhode Island; M.A., 1989, Ph.D., 1994, University of Arizona.*

★Covino, Peter, *Assistant Professor of English, 2006. B.A., 1985, Amherst College; M.S., 1991, Columbia University; M.A., 2001, City College of New York; Ph.D., 2006, University of Utah.*

★Creed, W.E. Douglas, *Associate Professor of Management, 2003. B.A., 1979, Yale University; M.A., 1981, Yale Divinity School; M.B.A., 1989, Ph.D., 1994, University of California, Berkeley.*

★Cunningham, Donald, *Professor of Sociology, 2007, 1993. B.A., 1974, Tougaloo College; M.A., 1976, University of New Hampshire; A.M., 1979, Ph.D., 1988, Harvard University.*

DaDalt, Peter J., *Assistant Professor of Finance, 2006. B.S., 1980, University of Connecticut; Ph.D., 1998, Georgia State University.*

★Dain, Joel A., *Professor of Chemistry, 1973, 1962. B.S., 1953, University of Illinois; Ph.D., 1957, Cornell University.*

★Daly, James Caffrey, *Professor of Electrical Engineering*, 1983, 1969. B.S., 1960, University of Connecticut; M.E.E., 1962, Ph.D., 1967, Rensselaer Polytechnic Institute.

★Dalton, Tracey M., *Assistant Professor of Marine Affairs*, 2002. B.S., 1996, Boston College; Ph.D., 2002, University of Massachusetts, Boston.

★Danis, Ann, *Associate Professor of Music*, 2001, 1995. B.Mus., 1969, M.Mus., 1971, New England Conservatory, Boston.

★Dash, Gordon H., Jr., *Professor of Finance*, 2007, 1974. B.A., 1968, Coe College; M.B.E., 1974, D.B.A., 1978, University of Colorado.

★Datseris, Philip, *Professor of Mechanical Engineering and Applied Mechanics*, 1989, 1977. B.S., 1973, M.S., 1974, M.Phil., 1976, Ph.D., 1977, Columbia University.

★DeAlteris, Joseph T., *Professor of Fisheries, Animal and Veterinary Science*, 1995, 1989. B.A., 1968, Rutgers-The State University of New Jersey; M.A., 1973, Ph.D., 1986, College of William and Mary.

★DeBoef, Brenton L., *Assistant Professor of Chemistry*, 2005. B.S., 1998, Evangel University; M.A., 2000, Ph.D., 2003, Washington University.

★Deeney, Theresa A., *Associate Professor, School of Education*, 2007, 2001. B.S., 1980, Fitchburg State College; M.S., 1987, University of Massachusetts, Boston; Ed.D., 1997, Harvard University Graduate School of Education.

★Della Bitta, Albert J., *Professor of Marketing*, 1981, 1971. B.S., 1964, University of Connecticut; M.B.A., 1966, Ph.D., 1971, University of Massachusetts.

Delmonico, Matthew J., *Assistant Professor of Kinesiology*, 2007. B.S., 1992, University of Maine; M.S., 1996, University of Rhode Island; M.P.H., 2001, University of South Florida; Ph.D., 2005, University of Maryland.

★de los Heros, Susana, *Associate Professor of Spanish*, 2002, 1997. B.A., 1988, Pontificia Universidad, Catolica del Peru; M.A., 1992, Ph.D., 1997, University of Pittsburgh.

★deMesquita, Paul J.B., *Professor of Psychology*, 2006, 1996. B.S., 1970, University of South Florida; M.S., 1973, Indiana University; Ph.D., 1987, University of Texas, Austin.

★Dempsey, John David, *Professor of Music*, 1982, 1973. B.M., 1963, Baldwin-Wallace College; M.M., 1964, Eastman School of Music, University of Rochester.

★Deng, Ruitang, *Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2005. B.S., 1983, Zhejiang University; M.S., 1986, Nanjing Agriculture University; Ph.D., 1992, Ohio State University.

★Derbyshire, Madeline (Lynne), *Associate Professor of Communication Studies*, 2003, 1997. B.A., 1972, State University of New York, Buffalo; M.A., 1976, State University of New York, Buffalo; Ph.D., 1997, University of Maryland.

★Devin, Robin B., *Professor, Library*, 1997, 1980. B.A., 1970, M.L.S., 1971, University of Wisconsin; M.A., 1984, University of Rhode Island; Ph.D., 1995, University of Connecticut.

★Dewhurst, Peter, *Professor of Industrial and Systems Engineering*, 1985. B.S., 1970, M.S., 1971, Ph.D., 1973, University of Manchester.

★Dholakia, Nikhilesh, *Professor of Marketing*, 1984, 1981. B.Tech., 1969, Indian Institute of Technology, New Delhi; M.B.A., 1971, Indian Institute of Management, Ahmedabad; Ph.D., 1975, Northwestern University.

★Dholakia, Ruby Roy, *Director of Research Institute for Telecommunications and Information Marketing and Professor of Marketing*, 1984, 1981. B.S., 1967, M.B.A., 1969, University of California, Berkeley; Ph.D., 1976, Northwestern University.

★D'Hondt, Steven L., *Professor of Oceanography*, 2000, 1989. B.Sc., 1984, Stanford University; M.A., 1986, Ph.D., 1990, Princeton University.

★D'Onise, Rachel L., *Assistant Professor of Communication Studies*, 2003. B.A., 1992, University of Rhode Island; M.A., 1994, Michigan State University; Ph.D., 2001, Kent State University.

Dilworth, Robert P., *Professor of Art*, 1999, 1996. B.A., 1973, Rhode Island School of Design; M.F.A., 1976, School of the Art Institute of Chicago.

★DiPippo, Lisa Cingiser, *Associate Professor of Computer Science*, 2005, 1999. B.S., 1987, Lafayette College; M.S., 1991, Ph.D., 1995, University of Rhode Island.

★Donnelly, Dorothy F., *Professor of English*, 1985, 1965. B.A., 1963, University of Rhode Island; A.M., 1965, Brown University; Ph.D., 1979, Brandeis University.

Dorado, Silvia, *Assistant Professor of Management*, 2006. B.A., 1988, Universidad Autonoma de Madrid; M.A., 1993, Massachusetts Institute of Technology; Ph.D., 2001, McGill University, Montreal.

★Dufault, Marlene, *Associate Professor of Nursing*, 1996, 1990. B.S., 1970, Alverno College; M.S., 1976, University of Rhode Island; Ph.D., 1983, University of Connecticut.

★Dufresne, Robert L., *Professor of Pharmacy Practice*, 2003, 1990. B.S., 1980, M.S., 1985, Ph.D., 1989, 1990, University of Rhode Island.

★Dugal, Sanjiv, *Associate Professor of Management*, 1995, 1991. B.A., 1969, St. Stephen's College, Delhi University; M.Economics, 1971, Delhi School of Economics; M.B.A., 1985, Ph.D., 1991, University of Massachusetts.

★Dunn, John, *Associate Professor of Management*, 1990, 1983. A.B., 1974, Boston College; J.D., 1977, Boston College Law School.

★Dunphy, Lynne, *Professor of Nursing*, 2006. B.S.N., 1980, Skidmore College; M.S.N., 1985, Hunter College; Ph.D., 1992, University of Miami, Coral Gables.

★Dunson, Stephanie, *Assistant Professor of English*, 2004. B.A., 1985, M.A., 1987, Ohio University; M.A., Ph.D., 2003, University of Massachusetts.

★Durand, Alain-Philippe, *Associate Professor of French, Film Studies, and Comparative Literature*, 2004, 1999. B.A., 1992, Emporia State University; M.A., 1994, M.A., 1995, University of Kansas; Ph.D., 1999, University of North Carolina, Chapel Hill.

★Durbin, Edward G., *Professor of Oceanography*, 1993, 1980. B.Sc., 1968, M.Sc., 1969, Auckland University; Ph.D., 1976, University of Rhode Island.

★Dvorak, Wilfred P., *Associate Dean of the College of Arts and Sciences and Professor of English*, 1992, 1968. B.A., 1962, Loras College; M.A., 1964, Kansas State University; Ph.D., 1972, Indiana University.

★Dyehouse, Jeremiah, *Assistant Professor of Writing*, 2004. B.A., 1997, Oberlin College; M.A., 2000, Ph.D., 2004, The Pennsylvania State University.

★Eaton, Elizabeth Gale, *Professor of Library and Information Studies*, 2006, 1988. A.B., 1969, Smith College; M.L.S., 1974, University of Rhode Island; Ph.D., 1990, University of North Carolina, Chapel Hill.

★Eaton, Nancy, *Professor of Mathematics*, 2005, 1992. B.A., 1985, State University of New York, New Paltz; Ph.D., 1992, Emory University.

Echevarria, Megan M., *Assistant Professor of Languages*, 2004. B.A., 1996, University of Richmond; M.A., 1999, Ph.D., 2004, University of North Carolina.

Edwards, Robert L. B., *Professor of Military Science and Leadership*, B.S., 1991, M.S., 1995, M.B.A., 2002, Virginia Tech.

★Eichinger, Joanne, *Professor of Education*, 2001, 1998. B.S., 1974, M.S., 1978, State University of New York, Buffalo; Ph.D., 1988, Syracuse University.

★Ellis, M. Kathleen, *Assistant Professor of Kinesiology*, 2002. B.A., 1989, University of North Carolina; M.Ed., 1991, Bowling Green State University; Ph.D., 2001, Michigan State University.

★Englander, Larry, *Associate Professor of Plant Sciences*, 1981, 1972. B.S., 1964, The Pennsylvania State University; M.S., 1967, Cornell University; Ph.D., 1973, Oregon State University.

★English, Catherine, *Professor of Nutrition and Food Science*, 2004, 1985. B.A., 1975, Boston University; M.S., 1982, University of Vermont; Ph.D., 1993, University of Connecticut.

Erickson, Lars O., *Associate Professor of French*, 2006, 2001. B.A., 1989, Hamline University; M.A., 1994, Ph.D., 1998, University of North Carolina, Chapel Hill.

★Euler, William B., *Professor of Chemistry*, 1993, 1982. B.S., 1976, University of Wisconsin, LaCrosse; Ph.D., 1979, Florida State University.

★Faghri, Mohammad, *Professor of Mechanical Engineering and Applied Mechanics*, 1989, 1983. B.S., 1969, M.S., 1970, University of California, Berkeley; Ph.D., 1973, Oregon State University.

★Farmer, David M., *Dean of the Graduate School of Oceanography and Professor of Oceanography*, 2001. B.A., 1967, M.S., 1969, McGill University; Ph.D., 1972, University of British Columbia.

★Fasching, James L., *Professor of Chemistry*, 1979, 1969. B.S., 1964, North Dakota State University; S.M., 1967, Ph.D., 1970, Massachusetts Institute of Technology.

★Fastovsky, David E., *Professor of Geosciences*, 1997, 1986. B.S., 1977, Reed College; M.S., 1981, University of California, Berkeley; Ph.D., 1986, University of Wisconsin.

★Faust, David, *Professor of Psychology*, 1994, 1989. B.A., 1974, Alfred University; M.A., 1977, Ph.D., 1979, Ohio University.

★Favazza, Antoinette E., *Professor of Education*, 2001, 1998. B.A., 1971, University of Miami; M.A., 1975, Glensboro State College; Ph.D., 1983, Johns Hopkins University.

★Fay-Wolfe, Victor, *Professor of Computer Science*, 2002, 1991. B.S.E., 1983, Tufts University; M.S.E., 1986, Ph.D., 1991, University of Pennsylvania.

Feather, Roberta Brown, *Associate Professor of Nursing*, 1981, 1973. B.S., 1963, M.S., 1965, University of North Carolina; D.Ed., 1980, Boston University.

★Feldman, Marshall M., *Associate Professor of Community Planning and Area Development*, 1993, 1987. B.S., 1968, M.Eng., 1969, Cornell University; Ph.D., 1981, University of California, Los Angeles.

★Ferguson, Earline R., *Associate Professor of History*, 2005, 2000. B.A., 1974, M.A., 1989, Ph.D., 1997, Indiana University.

★Ferszt, Ginette C., *Associate Professor of Nursing*, 2003, 1994. B.A., 1974, Central Connecticut State College; M.S.N., 1978, University of Pennsylvania; Ph.D., 2000, University of Rhode Island.

★Fey-Yensan, Nancy, *Professor of Nutrition and Food Science*, 2006, 1996. B.S., 1978, M.S., 1984, Ph.D., 1995, University of Connecticut.

★Finizio, Norman J., *Professor of Mathematics*, 1994, 1963. B.S., 1960, M.S., 1962, University of Rhode Island; Ph.D., 1972, Courant Institute of Mathematical Sciences, New York University.

★Fischer, Godi, *Professor of Electrical Engineering*, 1998, 1991. M.S., 1978, Ph.D., 1985, Swiss Federal Institute of Technology.

★Flannery-Schroeder, Ellen C., *Assistant Professor of Psychology*, 2004. B.A., 1990, Franklin and Marshall College; M.A., 1992, Connecticut College; Ph.D., 1997, Temple University.

Florea, Mona, *Assistant Professor, Library*, 2006. M.A., 1983, University of Bucharest, Romania; M.L.S., 2001, Southern Connecticut State University.

★Florin, Paul Richard, *Professor of Psychology*, 1993, 1981. B.A., 1974, Villanova University; Ph.D., 1981, George Peabody College of Vanderbilt University.

Fogleman, Jay A. Jr., *Assistant Professor of Education*, 2007. B.S., 1984, University of Maryland; M.A.T., 1991, Johns Hopkins University.

★Forrester, Graham E., *Professor of Natural Resources Science*, 2007, 1999. B.S., 1985, University of Wales; M.S., 1988, University of Sydney; Ph.D., 1992, University of New Hampshire.

★Foster, Cheryl A., *Professor of Philosophy*, 2002, 1992. B.A., 1983, Bowdoin College; M.A., 1986, University of Chicago; Ph.D., 1992, University of Edinburgh.

Frankel, Matthew, *Assistant Professor of English*, 2003. B.A., 1994, State University of New York at Albany; M.A., 1996, Ph.D., 2001, Northwestern University.

★Freeman, David L., *Professor of Chemistry*, 1988, 1976. B.S., 1967, University of California, Berkeley; Ph.D., 1972, Harvard University.

★Gates, John M., *Professor of Environmental and Natural Resource Economics*, 1982, 1969. B.S., 1962, McGill University; M.S., 1965, University of Connecticut; Ph.D., 1969, University of California, Berkeley.

★George, Timothy S., *Associate Professor of History*, 2002, 1998. B.A., 1977, Stanford University; M.A., 1984, University of Hawaii; M.A., 1993, Ph.D., 1996, Harvard University.

★Gerber, Leonard E., *Associate Professor of Nutrition and Food Science*, 1991, 1981. A.B., 1974, Columbia University; Ph.D., 1979, University of Illinois.

★Ghoneim, Hamouda, *Distinguished Engineering Professor of Mechanical Engineering and Applied Mechanics*, 1997, 1981. B.Eng., 1969, Alexandria University (Egypt); M.S., 1976, Ph.D., 1978, McGill University.

★Gilton, Donna, *Professor of Library and Information Studies*, 2007, 1992. B.A., 1972, M.S., 1975, Simmons College; Ph.D., 1988, University of Pittsburgh.

★Gindy, Mayra, *Assistant Professor of Civil and Environmental Engineering*, 2004. B.S., 2000, M.S., 2002, Ph.D., 2004, Rutgers, The State University of New Jersey.

★Ginis, Isaac, *Professor of Oceanography*, 2003, 1993. M.S., 1977, Kabardino-Balkar State University, Russia; Ph.D., 1986, Institute of Experimental Meteorology, Russia.

★Gititi, Gitahi, *Professor of English and African and African-American Studies*, 2002, 1991. B.Ed., 1978, Kenyatta University; M.A., 1980, University of Nairobi, Kenya; Ph.D., 1990, University of Minnesota.

★Gitlitz, David M., *Professor of Spanish*, 1988. B.A., 1963, Oberlin College; M.A., 1964, Ph.D., 1968, Harvard University.

★Gold, Arthur J., *Professor of Natural Resources Science*, 1993, 1983. B.S., 1973, M.S., 1978, University of Michigan; Ph.D., 1983, Michigan State University.

★Goldsmith, Marian R., *Professor of Biological Sciences and of Cell and Molecular Biology*, 1995, 1983. B.A., 1964, University of Rochester; Ph.D., 1970, University of Pennsylvania.

★Golet, Francis C., *Professor of Natural Resources Science*, 1991, 1972. B.A., 1967, Brown University; M.S., 1969, Cornell University; Ph.D., 1973, University of Massachusetts.

★Gomez-Chiarri, Marta, *Associate Professor of Fisheries, Animal and Veterinary Science*, 2003, 1997. B.S., 1988, Ph.D., 1992, Universidad Complutense, Madrid.

★Gonzalez, M. Liliana, *Associate Professor of Statistics*, 2005, 2000. B.S., 1977, Quindio University; M.S., 1981, University of Houston; Ph.D., 1991, University of Wyoming.

★Gordon, William R., Jr., *Associate Professor of Community Planning*, 1995, 1991. B.A., 1977, University of Maine, Portland; M.A., 1980, M.M.A., 1981, University of Rhode Island; Ph.D., 1987, Texas A&M University.

Goren, Jessica L., *Assistant Professor of Pharmacy Practice*, 2005. B.S., 1993, Pharm.D., 1997, University of Rhode Island.

★Gorman, Kathleen S., *Professor of Psychology*, 2006, 2000. A.B., 1978, University of Notre Dame; Ph.D., 1987, University of Maryland.

★Graham, Allan W., *Associate Professor of Accounting*, 2006, 2000. B.A., 1978, M.B.A., 1982, University of North Carolina, Chapel Hill; Ph.D., 2000, Virginia Polytechnic Institute and State University.

★Grandin, John M., *Professor of German*, 1987, 1970. B.A., 1963, Kalamazoo College; M.A.T., 1965, Wesleyan University; M.A., 1968, Ph.D., 1970, University of Michigan.

★Gray, Donald J., *Associate Professor of Chemical Engineering*, 1987, 1980. B.S., 1970, M.S., 1978, Ph.D., 1980, University of Rhode Island.

★Green, William A., *Professor of Community Planning and Landscape Architecture*, 2006, 1992. B.A., 1972, State University of New York, Albany; M.L.A., 1980, Cornell University.

★Greene, Geoffrey Walker, *Professor of Nutrition and Food Science*, 2000, 1990. A.B., 1970, M.S., 1975, Columbia University; M.P.H., 1978, University of Hawaii; Ph.D., 1984, Pennsylvania State University.

★Greenfield, Michael L., *Associate Professor of Chemical Engineering and the Victor J. Baxt Chair in Polymer Engineering*, 2002. B.S., 1990, Johns Hopkins University; Ph.D., 1996, University of California, Berkeley.

★Gregory, Otto J., *Distinguished Professor of Chemical Engineering*, 1993, 1982. B.S., 1975, M.S., 1977, University of Rhode Island; Ph.D., 1982, Brown University.

★Grigalunas, Thomas A., *Professor of Environmental and Natural Resource Economics*, 1984, 1971. B.S., 1965, M.S., 1967, Northeastern University; Ph.D., 1972, University of Maryland.

★Grilli, Stephan, *Distinguished Engineering Professor of Ocean Engineering*, 1998, 1991. M.Sc.C.E., 1980, M.Sc.Oc., 1983, Ph.D., 1985, University of Liege (Belgium).

★Grove, Edward A., *Professor of Mathematics*, 1988, 1968. B.S., 1962, University of Arizona; Ph.D., 1969, Brown University.

★Grubman-Black, Stephen David, *Professor of Women's Studies and Communication Studies*, 1993, 1972. B.S., 1967, M.A., 1969, Temple University; Ph.D., 1972, State University of New York, Buffalo.

★Guglielmi, Kathleen A., *Associate Professor of Education*, 2006, 2000. B.S., 1993, Rhode Island College; M.A., 1996, Ph.D., 2000, University of Connecticut.

★Hales, Douglas N., *Assistant Professor of Operations and Supply Chain Management*, 2005. B.S., 1992, Brenau University; M.B.A., 1999, Kennesaw State University; Ph.D., 2005, Clemson University.

★Hamel, Lutz H., *Assistant Professor of Computer Science and Statistics*, 2003. B.S., 1985, University of Rhode Island; M.S., 1990, University of New Hampshire; Doctorate, 1997, Oxford University, United Kingdom.

Hames, Carolyn C., R.N., *Associate Professor of Nursing*, 2003, 1972. B.S.N., 1969, M.N., 1971, University of Florida.

★Hamilton, Cynthia, *Professor of Political Science and Director of African and African-American Studies Program*, 1999, 1992. B.A., 1970, Stanford University; Ph.D., 1980, Boston University.

★Hamilton, Mary, *Assistant Professor of Management*, 2003. B.S., 1985, Loyola University; M.S., 1990, Northwestern University; Ph.D., 2003, University of Virginia.

★Hammadou, JoAnn, *Professor of French*, 2002, 1988. B.A., 1974, American University; M.A., 1980, University of New Hampshire; Ph.D., 1988, Ohio State University.

★Hannel, Susan L., *Associate Professor of Textiles, Fashion Merchandising, and Design*, 2006, 2000. B.S., 1985, M.S., 1994, Ph.D., 2001, The Ohio State University.

★Hanumara, R. Choudary, *Professor of Statistics*, 1988, 1968. B.A., 1956, Madras University; M.S., 1958, Gujarat University; M.S., 1962, Michigan State University; Ph.D., 1968, Florida State University.

★Hara, Tetsu, *Professor of Oceanography*, 2003, 1994. B.Eng., 1983, M.Eng., 1986, University of Tokyo; Ph.D., 1990, Massachusetts Institute of Technology.

★Harlow, Lisa L., *Professor of Psychology*, 1996, 1985. B.A., 1979, California State University; M.A., 1981, California State University, Fullerton; Ph.D., 1985, University of California, Los Angeles.

Harper, Laurie J., *Assistant Professor of Human Development and Family Studies*, 2007. B.A., 1990, M.S., 1993, M. S., 1998, State University of New York, Potsdam; Ph.D., 2005, University of New Hampshire.

★Harps-Logan, Yvette, *Associate Professor of Textiles, Fashion Merchandising, and Design*, 1997, 1989. B.S., 1973, Radford College; M.S., 1976, Ph.D., 1990, Virginia Polytechnic Institute and State University.

★Harris, Shanette M., *Associate Professor of Psychology*, 1998, 1994. B.S., 1982, Howard University; M.A., 1984, Western Carolina University; Ph.D., 1989, Virginia Polytechnic Institute and State University.

★Havener, W. Michael, *Professor of Library and Information Studies*, 2001, 1999. B.A., 1971, Ohio Wesleyan University; A.M., 1972, A.M.L.S., 1975, University of Michigan; Ph.D., 1988, University of North Carolina, Chapel Hill.

★Hazera, Alejandro, *Professor of Accounting*, 2007, 1990. B.S., 1980, Virginia Polytechnic Institute; M.S., 1983, D.B.A., 1989, University of Kentucky; C.P.A. (Virginia).

★Hebert, David L., *Professor of Oceanography*, 2003, 1992. B.Sc., 1980, Dalhousie University; M.Sc., 1982, University of Victoria; Ph.D., 1988, Dalhousie University.

Hedderich, Norbert, *Professor of German*, 2004, 1991. M.A., 1982, Catholic University of America; Ph.D., 1991, Purdue University.

★Heifetz, Louis J., *Professor of Education*, 1998. B.A., 1969, Yale University; Ph.D., 1974, Harvard University.

★Heikes, Brian G., *Professor of Oceanography*, 2003, 1988. B.S., 1976, M.S., 1978, Ph.D., 1984, University of Michigan.

★Heitsch, James F., *Professor of Statistics*, 1985, 1973. B.A., 1968, Millersville State College; M.S., 1970, Ph.D., 1973, Kansas State University.

★Hennessey, Timothy M., *Professor of Political Science and Marine Affairs*, 1978, 1976. A.B., 1962, Brown University; Ph.D., 1968, University of North Carolina.

Hensley Owens, Kim, *Assistant Professor of Writing and Rhetoric*, 2007. B.A., 1996, University of Arizona; M.A., 2002, Ph.D., 2007, University of Illinois, Urbana-Champaign.

★Heppner, Frank H., *Professor of Biological Sciences*, 1979, 1969. B.A., 1962, University of California, Berkeley; M.A., 1964, San Francisco State College; Ph.D., 1967, University of California, Davis.

★Hermes, O. Don, *Professor of Geosciences*, 1978, 1968. A.B., 1961, Washington University; M.S., 1963, Ph.D., 1967, University of North Carolina.

★Hervé, Jean-Yves, *Associate Professor of Computer Science*, 2006, 2001. B.S., 1985, École Centrale de Lyon (France); Ph.D., 1993, University of Maryland.

★Heskett, David, *Professor of Physics*, 1998, 1988. B.S., 1978, Brown University; Ph.D., 1985, University of Pennsylvania.

★Hickox, Charles, *Professor of Management*, 1996, 1984. B.A., 1974, Colby College; J.D., 1979, Washington University; M.S., 1984, University of Rhode Island; L.L.M., 1994, Boston University.

★Hicks, Sandy J., *Associate Professor of Education*, 1999, 1993. B.A., 1987, University of California; Ph.D., 1993, University of Arizona.

★Higgins, Mark, *Dean of the College of Business Administration and Professor of Accounting*, 2006, 1988. B.S., 1979, M.A., 1981, University of South Carolina; Ph.D., 1989, University of Tennessee; C.P.A. (South Carolina).

★Hollinshead, Mary B., *Associate Professor of Art*, 1998, 1992. A.B., 1969, Bryn Mawr; M.A., 1973, Harvard University; Ph.D., 1979, Bryn Mawr.

★Honhardt, Michael W., *Professor of History*, 2005, 1971. B.A., 1966, Carleton College; M.A., 1968, Ph.D., 1972, Duke University.

Howard, David T., *Associate Professor of Theatre*, 2007, 2001. B.F.A., 1990, State University of New York, Fredonia; M.F.A., 1998, University of Connecticut, Storrs.

Howlett, Niall G., *Assistant Professor of Cell and Molecular Biology*, 2007. B.S., 1994, University of Limerick, Ireland; Ph.D., 1999, Oxford Brookes University, U.K.

★Hu, Sau-Lon James, *Professor of Ocean Engineering*, 1999, 1984. B.S., 1978, National Taiwan University; M.S., 1982, Ph.D., 1984, Rice University.

★Hufnagel, Linda A., *Professor of Cell and Molecular Biology*, 1986, 1973. B.A., 1961, M.S., 1963, University of Vermont; Ph.D., 1967, University of Pennsylvania.

★Hughes, Donna M., *Professor of Women's Studies and Eleanor M. and Oscar M. Carlson Endowed Chair in Women's Studies*, 2001, 1996. B.S., 1975, M.S., 1977, Ph.D., 1990, Pennsylvania State University.

Hume, Anne L., *Professor of Pharmacy Practice*, 1996, 1985. B.S., 1977, University of Pittsburgh; Pharm.D., 1982, Medical College of Virginia.

★Hunter, Christopher, *Assistant Professor of Civil and Environmental Engineering*, 2001, 1998. B.S., 1989, Morehouse College; M.S., 1993, Ph.D., 2000, University of Washington.

★Husband, Thomas P., *Professor of Natural Resources Science*, 1991, 1977. A.B., 1972, University of Michigan; M.S., 1974, Ph.D., 1977, Michigan State University.

★Hutt, Ron, *Assistant Professor of Art*, 2002. B.A., 1983, University of Kentucky; M.A., 1986, University of Louisville; M.F.A., 1995, The School of the Art Institute of Chicago.

★Irvine, Steven, *Assistant Professor of Biological Sciences*, 2002. B.S., 1979 University of Illinois; M.A., 1983, Harvard University; Ph.D., 1998, University of Chicago.

Izenstark, Amanda K., *Assistant Professor, Library*, 2006. B.A., 1995, University of Massachusetts; M.L.I.S., 2001, University of Rhode Island.

★Jackson, Leland B., *Professor of Electrical Engineering*, 1979, 1974. S.B., S.M., 1963, Massachusetts Institute of Technology; Sc.D., 1970, Stevens Institute of Technology.

Jamiel, Mary Healy, *Assistant Professor of Communication Studies and Film Media*, 2006. B.A., 1990, Rhode Island College; M.A., 1994, Emerson College.

★Jarrett, Jeffrey E., *Professor of Management Science*, 1974, 1971. B.B.A., 1962, University of Michigan; M.B.A., 1963, Ph.D., 1967, New York University.

★Jelinek, Kate, *Assistant Professor of Accounting*, 2005. B.B.A., 1998, C.P.A., 2001, University of Massachusetts; Ph.D., University of Connecticut.

Jenkins, Bethany D., *Assistant Professor of Cell and Molecular Biology*, 2005. B.A., 1990, Mount Holyoke College; Ph.D., 2000, University of Oregon.

Jervis, Kathryn, *Assistant Professor of Business Administration*, 2007. B.A., 1979, Rhode Island College; M.S., 1987, University of Rhode Island; Ph.D., 1997, University of Connecticut.

★Johnson, Galen A., *Director of the Honors Program and Professor of Philosophy*, 1987, 1976. B.A., 1971, Wheaton College; M.A., 1973, Northern Illinois University; Ph.D., 1977, Boston University.

★Jones, J., Jennifer, *Assistant Professor of English*, 2005. B.A., 1995, University of California at Santa Cruz; M.A., 1997, Ph.D., 2002, University of California at Santa Barbara.

★Joseph, Dayle Hunt, R.N., *Dean of the College of Nursing and Professor of Nursing*, 2007, 1973. B.S., 1969, M.Ed., 1973, Rhode Island College; M.S., 1975, University of Rhode Island; Ed.D., 1982, Boston University.

★Jouaneh, Musa K., *Professor of Mechanical Engineering, 2003, 1990. B.S., 1984, University of Southwestern Louisiana; M.Eng., 1986, Ph.D., 1989, University of California, Berkeley.*

★Juda, Lawrence, *Professor of Marine Affairs and Political Science, 1984, 1977. B.A., 1966, City College of New York; Ph.D., 1973, Columbia University.*

★Kahn, Leonard M., *Professor of Physics, 1992, 1980. B.S., 1971, Harvey Mudd College; M.S., 1973, Ph.D., 1976, Brown University.*

★Kalymun, Mary, *Associate Professor of Human Development and Family Studies, 1996, 1974. B.S., 1967, Mansfield State College; M.S., 1973, Drexel University; Ph.D., 1982, University of Pennsylvania.*

Kapstein, Claire L., *Assistant Professor of Textiles, Fashion Merchandising, and Design, 2006. B.S., 2001, M.A., 2004, Ph.D., 2006, University of Minnesota.*

★Karamanlidis, Dimitrios, *Associate Professor of Civil and Environmental Engineering, 1990, 1983. D.Eng., 1979, Technical University of Berlin.*

★Karno, Valeria A., *Associate Professor of English, 2006, 2000. B.A., 1987, University of California, Berkeley; J.D., 1991, Hastings College of the Law; M.A., 1992, University of Michigan; Ph.D., 2000, University of Southern California.*

★Kaskosz, Barbara, *Professor of Mathematics, 1994, 1984. M.S., 1973, University of Warsaw; Ph.D., 1977, Polish Academy of Sciences.*

★Kass-Simon, Gabriele, *Professor of Biological Sciences, 1990, 1973. B.A., 1956, University of Michigan; M.A., 1959, Columbia University; D.Phil., 1967, University of Zurich.*

★Katz, Clifford H., *Associate Professor of Biological Sciences, 2006, 1991. B.A., 1974, M.S., 1978, Ph.D., 1982, University of Connecticut, Storrs.*

★Kaufman, Charles, *Professor of Physics, 1983, 1964. B.S., 1956, University of Wisconsin; M.S., 1959, Ph.D., 1963, Pennsylvania State University.*

★Kausch, Albert P., *Professor of Cell and Molecular Biology, 2004, 1993, and Plant Sciences, 2000. B.A., 1978, State University of New York at Oswego; M.S., 1980, Ph.D., 1983, Iowa State University.*

★Kay, Steven M., *Professor of Electrical Engineering, 1990, 1980. B.S., 1972, Stevens Institute of Technology; M.S., 1973, Columbia University; Ph.D., 1980, Georgia Institute of Technology.*

Keefe, Margaret, *Professor, Library, 2007, 1964. B.A., 1963, Albertus Magnus College; M.L.S., 1964, Rutgers-The State University of New Jersey.*

Kelland, J. Laurence, *Professor, Library, 1997, 1984. B.A., 1960, Rutgers-The State University of New Jersey; M.L.S., 1976, Queens College; M.A., 1962, Ph.D., 1964, Princeton University.*

★Kent, George Edgar, *Professor of Music, 1980, 1969. B.S., 1958, University of Rhode Island; M.M., 1960, New England Conservatory of Music.*

★Kern, Diane E., *Assistant Professor of Education, 2005. B.A., 1984, M.Ed., 1993, Ph.D., 2003, University of Rhode Island.*

★Ketrow, Sandra M., *Professor of Communication Studies, 1998, 1986. A.B., 1971, M.S., 1978, Ph.D., 1982, Indiana University.*

★Killilea, Alfred G., *Professor of Political Science, 1980, 1969. B.A., 1963, University of Notre Dame; M.A., 1965, Ph.D., 1969, University of Chicago.*

★Killingbeck, Keith T., *Professor of Biological Sciences, 1990, 1979. B.S., 1972, Purdue University; Ph.D., 1976, University of North Dakota.*

★Kim, Miyoung, *Assistant Professor of Communicative Disorders, 2002. B.A., 1986, M.A., 1988, Yonsei University; M.A., 1991, Pennsylvania State University; M.A., 1996, Ph.D., 2001, Northwestern University.*

★Kim, Sook-Hyun, *Assistant Professor of Textiles, Fashion Merchandising, and Design, 2004. B.S., 1997, Sook Myung Women's University; M.S., 2000, Ph.D., 2003, Virginia Polytechnic Institute and State University.*

★Kim, Thomas J., *Vincent and Estelle Murphy Professor of Mechanical Engineering and Applied Mechanics and Dean Emeritus, 1979, 1968. B.S., 1959, M.S., 1963, Seoul National University; M.A., 1964, Villanova University; Ph.D., 1967, University of Illinois-Urbana.*

★Kincaid, Christopher R., *Professor of Oceanography, 2004, 1991. B.S., 1983, Wesleyan University; M.S., 1987, Ph.D., 1989, Johns Hopkins University.*

★King, John W., *Professor of Oceanography, 2001, 1984. B.A., 1975, Franklin and Marshall College; Ph.D., 1983, University of Minnesota.*

★King, Roberta S., *Associate Professor of Biomedical and Pharmaceutical Sciences, 2007, 1999. B.S., 1989, University of Kansas; Ph.D., 1995, University of Iowa.*

Kinnie, James F., *Associate Professor, Library, 2007, 2000. B.A., 1972, Providence College; MEd., 1981, C.A.G.S., 1995, Rhode Island College; M.L.I.S., 2000, University of Rhode Island.*

★Kirchner, Doris, *Associate Professor of German, 1999, 1993. M.A., 1982, Karl-Eberhards-Universität Tübingen (FRG); Ph.D., 1989, University of Pennsylvania.*

★Kirschenbaum, Louis J., *Professor of Chemistry, 1983, 1970. B.S., 1965, Howard University; M.S., 1967, Ph.D., 1968, Brandeis University.*

★Kislalioglu, Serpil, *Professor of Biomedical and Pharmaceutical Sciences, 1994, 1988. B.S., 1967, Ankara University; Ph.D., 1973, University of London.*

Kisler, Tiffani S., *Assistant Professor of Human Development and Family Studies, 2006. B.S., 2000, M.S., 2004, Ph.D., 2006, Arizona State University.*

★Klein, Maurice Nickel, *Professor of History, 1973, 1964. B.A., 1960, Knox College; M.A., 1961, Ph.D., 1965, Emory University.*

Klenk, William Charles, *Professor of Art, 1976, 1960. B.F.A., 1952, Miami University; M.A., 1958, Ph.D., 1960, Ohio State University.*

★Knickle, Harold Norman, *Associate Dean and Professor of Chemical Engineering, 1982, 1969. B.S., 1962, University of Massachusetts; M.S., 1965, Ph.D., 1969, Rensselaer Polytechnic Institute.*

★Knight, Winston A., *Professor of Industrial and Systems Engineering, 1985. B.S., 1963, Ph.D., 1967, Birmingham University.*

★Knott, J. Eugene, *Associate Professor of Human Development and Family Studies, 1999, 1975. B.S., 1966, Xavier University; M.A., 1969; Ph.D., 1975, University of Maryland.*

★Kogut, Stephen, *Associate Professor of Pharmacy Practice, 2007, 2001. B.S., 1991, University of Rhode Island; M.B.A., 1997, Bryant College; Ph.D., 2001, University of Rhode Island.*

★Kook, Woong, *Associate Professor of Mathematics, 2007, 2001. B.A., 1991, Princeton University; M.A., 1993, Ph.D., 1997, Stanford University.*

★Koonce, Daniel A., *Assistant Professor of Psychology, 2000. B.A., 1993, S.S.P., 1996, Eastern Illinois University; Ph.D., 2000, Oklahoma State University.*

★Koske, Richard E., *Professor of Biological Sciences, 1990, 1978. B.S., 1967, California State Polytechnic University; Ph.D., 1971, University of British Columbia.*

★Kovarsky, Dana, *Professor of Communicative Disorders, 2007, 1996. B.A., 1976, University of Iowa; M.A., 1979, Kent State University; Ph.D., 1989, University of Texas, Austin.*

★Kowalski, James G., *Professor of Philosophy and Computer Science, 2003, 1971. B.S., 1966, M.A., 1970, Ph.D., 1975, University of Notre Dame.*

Krieger, William H., *Assistant Professor of Philosophy, 2006. B.A., 1991, Jewish Theological Seminary; B.S., 1991, Columbia University; M.A., 1996; Ph.D., 2003, Claremont Graduate University.*

Kroes, James, *Assistant Professor Business Administration, 2007. B.S., 1994, Rensselaer Polytechnic Institute; M.S., 1999, Georgia Institute of Technology.*

Krueger, Brian S., *Associate Professor of Political Science, 2006, 2001. B.A., 1996, State University of New York at Binghamton; Ph.D., 2002, University of Notre Dame.*

★Kulenovic, Mustafa R., *Professor of Mathematics, 2006, 2000. B.S., 1974, M.S., 1977, Ph.D., 1981, University of Sarajevo.*

★Kumaresan, Ramdas, *Professor of Electrical Engineering, 1992, 1983. B.E. (HONS), 1971, University of Madras; M.S., 1979, Ph.D., 1982, University of Rhode Island.*

Kusz, Kyle W., *Assistant Professor of Kinesiology, 2003. B.S., 1994, Ithaca College; M.S., 1996, Ph.D., 2002, University of Illinois, Urbana-Champaign.*

Kwak, Chanyeong L., *Assistant Professor of Nursing, 2001, 2000. B.S.N., 1982, Seoul National University; M.S.N., 1996, Yale University; Ph.D., 2001, University of Massachusetts, Boston.*

★Ladas, Gerasimos, *Professor of Mathematics, 1975, 1969. B.S., 1961, University of Athens; M.S., 1966, Ph.D., 1968, New York University.*

★Ladewig, James L., *Professor of Music*, 1994, 1985. B.Mus., 1971, Northwestern University; M.A., 1973; Ph.D., 1978, University of California, Berkeley.

Laforge, Robert G., *Professor of Psychology*, 2000. B.A., 1977, University of Massachusetts; Sc.D., 1987, Johns Hopkins University.

Lahiri, Amar K., *Professor, Library*, 1987, 1970. B.Com., 1954, Dip.Lang., 1958, 1960, Dip.Lib., 1961, M.A., 1963, University of Calcutta; M.A., 1972, University of Rhode Island.

LaLuna, Michelangelo, *Assistant Professor of Italian*, 2003. B.A., 1991, Ph.D., 1997, University of Calabria, Italy; M.A., 1994, Ph.D., 2001, Harvard University.

★Lamagna, Edmund A., *Professor of Computer Science*, 1994, 1976. A.B., Sc.B., 1970, Sc.M., 1971, Ph.D., 1975, Brown University.

★Lamont, Linda S., *Professor of Kinesiology*, 2004, 1993. B.S., 1975, Slippery Rock University; M.Ed., 1979, Cleveland State University; Ph.D., 1984, Kent State University.

LaPlante, Kerry, *Assistant Professor of Pharmacy Practice*, 2004. B.S., 1996, Canisius College; B.S., 2000, Pharm.D., 2002, Wayne State University.

★Lardaro, Leonard P., *Professor of Economics*, 1996, 1981. B.A., 1973, University of Rhode Island; Ph.D., 1979, Indiana University.

★Larrat, E. Paul, *Professor of Pharmacy Practice*, 2002, 1984. B.S., 1982, M.B.A., 1984, M.S., 1988, University of Rhode Island; Ph.D., 1992, Brown University.

Larsen, Peter J., *Assistant Professor, Library*, 2003. B.A., 1985, University of Wisconsin-Madison; M.A., 1988, University of Wisconsin-Milwaukee; M.L.I.S., 2001, University of Texas, Austin.

★Larson, Roger L., *Professor of Oceanography*, 1980. B.S., 1965, Iowa State University; Ph.D., 1970, Scripps Institution of Oceanography, University of California, San Diego.

★Lasky, Tamar, *Associate Professor of Pharmacy Practice*, 2006. B.S., 1976, Grinnell College; MSPH, 1980, Ph.D., 1984, University of North Carolina at Chapel Hill School of Public Health.

★Lauzier, Joan M., *Associate Dean of the College of Pharmacy and Professor of Pharmaceutics*, 1987, 1971. B.S., 1967, Ph.D., 1971, University of Rhode Island.

★Lauzon-Clabo, Laurie, *Assistant Professor of Nursing*, 2004, 2003. B.ScN., 1980, University of Windsor; M.S.N., 1991, Dalhousie University; Ph.D., 2004, University of Rhode Island.

★Laux, David Charles, *Professor of Cell and Molecular Biology*, 1984, 1973. B.A., 1966, Washington and Jefferson College; M.S., 1968, Miami University; Ph.D., 1971, University of Arizona.

★LaVelle, Marquisa, *Professor of Anthropology*, 2002, 1989. B.A., 1963, University of California, Santa Barbara; M.A., 1966, Ph.D., 1981, University of Michigan.

★Leatham, Geoffrey B., *Associate Professor of Communication Studies*, 2000, 1997. B.A., 1985, University of Washington; M.A., 1990, Ph.D., 1994, University of Iowa.

★LeBrun, Roger A., *Professor of Plant Sciences*, 1993, 1977. A.B., 1968, Providence College; M.S., 1973, Ph.D., 1977, Cornell University.

★Lee, Chong Min, *Professor of Nutrition and Food Science*, 1988, 1980. B.S., 1968, Don-Guk University; M.S., 1970, University of Georgia; Ph.D., 1974, University of Rhode Island.

★Lee, Kang Wayne, *Professor of Civil and Environmental Engineering*, 1993, 1985. B.S., 1974, Seoul National University; M.S., 1978, Rutgers-The State University of New Jersey; Ph.D., 1982, University of Texas, Austin.

★Lee, Ronald T., *Professor of Music*, 1992. B.A., 1962, Luther College; M.M., 1966, Ph.D., 1970, University of Michigan.

★Lee, Yul W., *Associate Professor of Finance and Insurance*, 1996, 1992. B.A., 1974, Yonsei University; M.A., 1985, Ph.D., 1986, University of Texas, Austin.

★Leo, John R., *Professor of English*, 1990, 1973. B.A., 1965, Yale University; M.A., 1967, Ph.D., 1972, Northwestern University.

★Leonard, Hillary A., *Assistant Professor of Marketing*, 2005. B.A., 1990, Williams College; Ph.D., 2005, University of Utah.

★Lessmann, Richard C., *Professor of Mechanical Engineering and Applied Mechanics*, 1983, 1969. B.S.M.E., 1964, Syracuse University; Sc.M., 1966, Ph.D., 1969, Brown University.

Letendre, Donald E., *Dean of the College of Pharmacy and Professor of Applied Pharmaceutical Sciences*, 2001. B.S., 1976, Massachusetts College of Pharmacy; Pharm.D., 1979, University of Kentucky.

Levin, Linda, *Professor of Journalism*, 2000, 1987. B.A., 1962, Michigan State University; M.S., 1986, Boston University.

★Lewis, James T., *Professor of Mathematics*, 1981, 1969. B.S., 1963, University of Notre Dame; M.S., 1966, Ph.D., 1969, Brown University.

★Lillethun, Abby G., *Assistant Professor of Textiles, Fashion Merchandising, and Design*, 2002. B.F.A., 1974, University of Georgia; M.F.A., 1980, Florida State University; Ph.D., 2002, The Ohio State University.

★Lin, Bing-Xuan, *Associate Professor of Finance*, 2007, 2001. B.A., 1994, Hua-Qiao University; M.B.A., 1996, University of South Alabama; Ph.D., 2001, Georgia State University.

★Livingston, Carolyn, *Professor of Music*, 1999, 1989. B.S., 1959, Tennessee Technological University; M.Ed., 1981, Ph.D., 1986, University of Florida.

★Lloyd, Scott J., *Associate Professor of Management Science and Information Systems*, 2005, 1999. B.S., 1985, M.S., 1987, Virginia Commonwealth University; Ph.D., 1995, Kent State University.

★Lo, Jien-Chung, *Professor of Electrical and Computer Engineering*, 1999, 1989. B.E., 1981, National Taipei Institute of Technology, Taiwan; M.S., 1987, Ph.D., 1989, University of Southwestern Louisiana.

★Logan, Patrick A., *Professor of Plant Sciences*, 1994, 1977. B.A., 1970, M.S., 1974, Ph.D., 1978, Michigan State University.

★Lohmann, Rainer, *Assistant Professor of Oceanography*, 2004. B.S., 1993, Ruhr-Universitaet Bochum; M.S., 1996, Ethics Strasbourg; Ph.D., 1999, Lancaster University.

★Loy, James D., *Professor of Anthropology*, 1984, 1974. B.S., 1965, University of Tennessee; M.A., 1966, Ph.D., 1969, Northwestern University.

★Lucht, Brett L., *Professor of Chemistry*, 2006, 1998. B.S., 1991, University of Puget Sound; Ph.D., 1996, Cornell University.

★Lucia, Angelo, *Chester H. Kirk Professor of Chemical Engineering*, 1995. B.S., 1974, University of Rhode Island; M.S., 1977, Ph.D., 1981, University of Connecticut.

★Luebke, Barbara F., *Professor of Journalism and Women's Studies*, 1993, 1989. B.A., 1971, Wisconsin State University, Eau Claire; M.S., 1972, University of Oregon; Ph.D., 1981, University of Missouri.

★Ma, Yan, *Associate Professor of Library and Information Studies*, 1999, 1997. B.A., 1982, Hangzhou University; M.L.S., 1988, Kent State University; Ph.D., 1993, University of Wisconsin, Madison.

MacDonald, Mary C., *Associate Professor, Library*, 2005, 1997. B.A., 1982, M.L.I.S., 1997, University of Rhode Island.

★Macinko, Seth S., *Assistant Professor of Marine Affairs*, 2002. B.Sc., 1986, Plymouth University, United Kingdom; M.A., 1988, University of Miami; Ph.D., 1996, University of California, Berkeley.

Mahler, Leslie A., *Assistant Professor of Communicative Disorders*, 2006. B.A., 1975, University of Colorado, Boulder; M.A., 1977, University of the Pacific; M.B.A., 1987, Drake University; Ph.D., 2006, University of Colorado, Boulder.

★Maier-Sperdelozzi, Valerie, *Assistant Professor of Industrial and Systems Engineering*, 2003. B.M.E., 1998, M.S.E., 2001, Georgia Institute of Technology; Ph.D., 2003, University of Michigan.

★Major, Jaycoda S., *Assistant Professor of Chemistry*, 2002. B.S., 1997, University of Nebraska, Kearney; Ph.D., 2002, Michigan State University.

★Malik, Surendra S., *Professor of Physics*, 1974, 1962. B.S., 1953, M.S., 1956, Ph.D., 1960, Agra University.

★Mallilo, Anthony T., *Professor of Fisheries, Animal and Veterinary Science*, 2000, 1982. B.S., 1976, M.S., 1979, West Virginia University; Ph.D., 1982, Pennsylvania State University.

★Mandel, Naomi, *Associate Professor of English*, 2006, 2000. B.A., 1993, B.M., 1993, Tel Aviv University; M.A., 1995, Ph.D., 2000, University of California, Irvine.

★Manfredi, Thomas G., *Professor of Kinesiology*, 1988, 1982. B.S., 1965, M.A., 1966, University of Maryland; Ph.D., 1976, University of Massachusetts.

★Mangiameli, Paul M., *Professor of Management Science and Information Systems*, 1992, 1977. B.S., 1972, M.B.A., 1974, New York University; Ph.D., 1979, Ohio State University.

★Manteiga, Robert, *Professor of Hispanic Studies*, 1988, 1976. B.A., 1969, University of Virginia; M.A., 1971, New York University; Ph.D., 1977, University of Virginia.

★Marcoux, Beth, *Professor of Physical Therapy*, 2004. B.S., 1974, Russell Sage College; M.S., 1979, University of Alabama at Birmingham; Ph.D., 1988, University of Michigan.

★Mardix, Shmuel, *Professor of Electrical Engineering*, 1978, 1970. M.S., 1966, Ph.D., 1969, University of Jerusalem.

★Marti, Bruce E., *Professor of Marine Affairs*, 1994, 1980. B.S., 1967, New Mexico State University; M.A., 1975, Florida Atlantic University; Ph.D., 1982, University of Florida.

★Martin, Celest A., *Associate Professor of Writing and Rhetoric*, 1984, 1979. B.A., 1973, Rutgers-The State University of New Jersey; Ph.D., 1979, University of Southern California.

★Martin, Lenore M., *Associate Professor of Cell and Molecular Biology*, 2002, 1994. B.A., 1983, Northeastern University; C.Phil., 1986, Ph.D., 1989, University of California, Los Angeles.

★Martin, Spencer J., *Professor of Accounting*, 1980, 1970. B.S., 1965, Bryant College; M.S., 1967, University of Rhode Island; Ph.D., 1970, University of Illinois; C.P.A.

Maslyn, David C., *Dean, University Libraries, University Archivist, Special Collections Librarian, and Professor, Library*, 1983, 1974. B.A., 1960, St. Bonaventure University; M.A., 1963, M.S.L.S., 1968, Syracuse University.

★Mather, I. Roderick, *Associate Professor of History*, 2002, 1997. B.A., 1986, Leeds University, England; M.A., 1990, East Carolina University; D.Phil., 1996, New College, Oxford.

★Mather, Thomas N., *Professor of Plant Sciences*, 1999, 1993. B.S., 1977, Muhlenberg College; M.S., 1980, University of Delaware; Ph.D., 1983, University of Wisconsin, Madison.

Matthew, Annu P., *Associate Professor of Art*, 2004, 1999. B.S., 1986, Women's Christian College, India; M.F.A., 1997, University of Delaware.

★Matoney, Joseph P., Jr., *Professor of Accounting*, 1983, 1973. B.S., 1967, M.B.A., 1968, Duquesne University; Ph.D., 1973, Pennsylvania State University; M.S.T., 1984, Bryant College; C.P.A. (Rhode Island).

★Maynard, Brian K., *Professor of Plant Sciences*, 2002, 1992. B.S., 1983, University of Delaware; M.S., 1986, Ph.D., 1990, Cornell University.

★Mazze, Edward, *Distinguished Professor of Marketing*, 1998. B.B.A., 1961, M.B.A., 1962, City University of New York; Ph.D., 1966, The Pennsylvania State University.

★McCarthy, Cheryl, *Professor of Library and Information Studies*, 2005, 1992. B.A., 1971, Rhode Island College; M.L.S., 1973, University of Rhode Island; D.A., 1990, Simmons College.

★McClure, Kevin R., *Associate Professor of Communication Studies*, 2002, 1996. B.S., 1982, State University of New York, Brockport; M.A., 1987, University of Maine; Ph.D., 1992, Pennsylvania State University.

McCray, Talia M., *Assistant Professor of Business Administration*, 2003. B.S., 1990, Bennett College; M.S., 1992, Northwestern University; Ph.D., 2001, University of Michigan.

★McCurdy, Karen P., *Associate Professor of Human Development and Family Studies*, 2005, 1999. A.B., 1982, Stanford University; M.A., 1989, Ph.D., 1997, Northwestern University.

McGlasson, Paula, *Associate Professor of Theatre*, 1991, 1985. B.S., 1974, Illinois Wesleyan University; M.S., 1980, Illinois State University.

★McIntyre, Richard, *Professor of Economics*, 1997, 1989. B.A., 1979, University of Rhode Island; Ph.D., 1989, University of Massachusetts.

★McKinney, William Lynn, *Dean of the College of Human Science and Services and Professor of Education*, 1993, 1972. B.A., 1965, Cornell College; M.A., 1968, University of Denver; Ph.D., 1973, University of Chicago.

★McNeil, Craig L., *Assistant Professor of Oceanography*, 2000. B.S., 1989, Heriot-Watt University, Scotland; Ph.D., 1995, University of Victoria, Canada.

★McWilliams, Scott, *Associate Professor of Natural Resources Science*, 2003, 1998. B.S., 1980, Hiram College; M.S., 1986, Iowa State University; Ph.D., 1993, University of California, Davis.

★Mead, Arthur C., *Professor of Economics*, 1996, 1976. B.A., 1971, Ph.D., 1978, Boston College.

★Meagher, Barbara J., *Assistant Professor of Journalism*, 2003. B.A., 1974, Boston College; M.S., 1980, Boston University.

★Mederer, Helen J., *Professor of Sociology*, 2001, 1986. B.A., 1976, Muhlenberg College; Ph.D., 1982, University of Minnesota.

★Medina-Bonifant, Araceli, *Assistant Professor of Mathematics*, 2004. B.S., 1989, Instituto Politécnico Nacional; M.S., 1990, Ph.D., 1997, Centro de Investigación y Estudios Avanzados, IPN.

Meghani, Zahra, *Assistant Professor of Philosophy*, 2006. B.A., 1993, St. John's College; M.A., 1995, Miami University; Ph.D., 2006, Michigan State University.

★Melanson, Kathleen J., *Associate Professor of Nutrition and Food Sciences*, 2007, 2001. B.S., 1987, University of New Hampshire; M.S., 1990, Pennsylvania State University; Ph.D., 1996, Tufts University.

★Merino, Orlando, *Professor of Mathematics*, 2007, 1993. B.A., 1980, Universidad de Costa Rica; Ph.D., 1988, University of California, San Diego.

★Merrill, John T., *Professor of Oceanography*, 1995, 1987. B.A., 1968, University of California; M.S., 1970, University of Illinois; Ph.D., 1976, University of Colorado.

★Meyer, Donna M., *Associate Professor of Mechanical Engineering*, 2006, 2002. B.S., 1993, University of Hartford; M.S., 1995, Ph.D., 1999, Rensselaer Polytechnic Institute.

★Meyerson, Frederick A.B., *Assistant Professor of Natural Resources Science*, 2006. B.A., 1980, Dartmouth College; J.D., 1984, Columbia Law School; Master of Environmental Science, 1995, Ph.D., 2000, Yale University.

★Meyerson, Laura, *Assistant Professor of Natural Resources Science*, 2005. B.A., 1993, City University of New York, Hunter College; M.S., 1995, Ph.D., 2000, Yale University.

★Meyerovich, Alexander E., *Professor of Physics*, 1992, 1989. Diploma, 1973, Moscow Physics-Technical Institute; Ph.D., 1977, D.Sc., 1985, Institute for Physical Problems, Academy of Sciences, Moscow.

★Miles, Elizabeth A., *Associate Professor of Writing and Rhetoric*, 2004, 1998. B.A., 1986, Williams College; M.A., 1995, Ph.D., 1999, Purdue University.

★Miller, Carole F., *Professor of Economics*, 1999, 1986. B.A., 1977, State University of New York, Brockport; M.A., 1983, Ph.D., 1988, Syracuse University.

★Miller, James H., *Professor of Ocean Engineering*, 2000, 1995. B.S., 1979, Worcester Polytechnic Institute; M.S., 1981, Stanford University; D.Sc., 1987, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution.

★Miller, Jean R., *Professor of Nursing and Weyker Endowed Chair of Thanatology*, 1988. A.A., 1959, Bethel College; B.S., 1962, University of Minnesota; M.N., 1964, M.A., 1971, Ph.D., 1975, University of Washington.

★Mitkowski, Nathaniel A., *Associate Professor of Plant Sciences*, 2007, 2001. B.S., 1997, University of Massachusetts; Ph.D., 2001, Cornell University.

★Moakley, Maureen F., *Professor of Political Science*, 1999, 1992. B.A., 1962, Immaculata College; M.A., 1973, State University of New York, Stony Brook; Ph.D., 1984, Rutgers-The State University of New Jersey.

Mollgaard, Eske, *Assistant Professor of Philosophy*, 2007. B.A., 1985, M.A., 1986, University of Copenhagen; Ph.D., 1993, Harvard University.

★Molloy, D. Scott, *Professor of Labor and Industrial Relations*, 2002, 1986. B.A., 1970, Rhode Island College; M.A., 1972, University of New Hampshire; Ph.D., 1991, Providence College.

Mongeau, Deborah, *Professor, Library*, 2004, 1987. B.A., 1973, University of Rhode Island; M.S.L.S., 1975, Rutgers-The State University of New Jersey.

★Montgomery, John T., *Professor of Mathematics*, 1984, 1973. B.S., 1966, University of Notre Dame; Ph.D., 1971, University of Wisconsin.

★Moore, Kendall M., *Assistant Professor of Journalism*, 2003. B.A., 1992, Syracuse University; M.A., 1996, New School for Social Research.

★Moran, Kathryn, *Professor of Oceanography and Ocean Engineering*, 2006, 2001. B.Sc., 1977, University of Pittsburgh; M.S., 1981, University of Rhode Island; Ph.D., 1995, Technical University of Nova Scotia (Dalhousie University).

★Moran, S. Bradley, *Professor of Oceanography*, 2003, 1993. B.Sc., 1985, Concordia University; Ph.D., 1991, Dalhousie University.

★Morello, Joseph G., *Professor of French*, 1997, 1968. B.S., 1963, Kutztown State College; M.A., 1964, Ph.D., 1968, University of Missouri.

★Morin, Thomas D., *Professor of Hispanic Studies*, 2004, 1977. B.A., 1960, Rutgers-The State University of New Jersey; M.A., 1968, Ph.D., 1975, Columbia University.

★Morokoff, Patricia J., *Professor of Psychology*, 1995, 1987. B.A., 1971, Indiana University; Ph.D., 1980, State University of New York, Stony Brook.

★Muller, Gerhard, *Professor of Physics*, 1991, 1984. B.S., 1974, M.S., 1977, Ph.D., 1980, University of Basel, Institute for Theoretical Physics, Switzerland.

★Mundorf, Norbert, *Professor of Communication Studies*, 1998, 1987. M.A., 1982, Ph.D., 1987, Indiana University.

★Murray, Daniel P., *Professor of Geosciences*, 1997, 1983. A.B., 1966, Dartmouth College; M.Sc., 1968, Ph.D., 1976, Brown University.

★Narasimhan, Seetharama, *Professor of Management Science*, 1984, 1979. B.S., 1959, University of Madras, India; M.S., 1963, University of Tennessee; Ph.D., 1973, Ohio State University.

Nassershari, Bahram, *Professor of Mechanical Engineering and Applied Mechanics*, 2003. B.S., 1980, Ph.D., 1983, Oregon State University.

★Needham, Thomas E., *Director, Drug Delivery Research and Development Laboratory, and Professor of Biomedical and Pharmaceutical Sciences*, 1989. B.S., 1965, M.S., 1967, Ph.D., 1970, University of Rhode Island.

★Nelson, David R., *Professor of Cell and Molecular Biology*, 1995, 1988. A.B., 1972, University of California, Los Angeles; M.S., 1974, University of Wisconsin; Ph.D., 1979, University of California, Los Angeles.

★Newman, Barbara M., *Professor of Human Development and Family Studies*, 2000. A.B., 1966, Ph.D., 1971, University of Michigan.

★Nightingale, M. Peter, *Professor of Physics*, 1991, 1983. Doktoraal, 1973, Ph.D., 1978, University of Amsterdam.

★Nixon, Dennis W., *Professor of Marine Affairs*, 1995, 1987. A.B., 1972, Xavier University; J.D., 1975, University of Cincinnati; M.M.A., 1976, University of Rhode Island.

★Nixon, Scott W., *Professor of Oceanography*, 1980, 1970. B.A., 1965, University of Delaware; Ph.D., 1969, University of North Carolina.

★Norris, Joanna Hanks, *Associate Professor of Biological Sciences and of Cell and Molecular Biology*, 1996, 1987. B.A., 1976, Ph.D., 1982, Michigan State University.

★Northby, Jan A., *Professor of Physics*, 1979, 1970. B.S., 1959, Massachusetts Institute of Technology; M.S., 1962, Ph.D., 1966, University of Minnesota.

★Nunes, Anthony C., *Professor of Physics*, 1982, 1976. Sc.B., 1964, Ph.D., 1969, Massachusetts Institute of Technology.

★O'Brien, Barbara S., *Assistant Professor of Nursing*, 2005. B.S.N., 1968, University of Michigan; M.S.N., 1976, University of Cincinnati; Ph.D., 1992, Ohio State University.

★Ohley, William J., *Professor of Electrical and Computer Engineering*, 1991, 1976. B.S., 1970, M.S., 1972, University of Massachusetts; Ph.D., 1976, State University of New York, Stony Brook.

★Okeke-Ezigbo, F.E., *Professor of English*, 1995, 1992. B.A., 1972, University of Nigeria, Nsukka; Ph.D., 1979, State University of New York, Buffalo.

O'Malley, William, *Professor, Library*, 1990, 1966. A.B., 1965, Boston College; M.L.S., 1967, University of Rhode Island.

★Onorato, Ronald J., *Professor of Art*, 1990, 1977. B.A., 1970, Rutgers College; M.A., 1973, Ph.D., 1977, Brown University.

★Opaluch, James J., *Professor of Environmental and Natural Resource Economics*, 1990, 1979. B.A., 1975, University of Rhode Island; M.A., 1977, Ph.D., 1979, University of California.

★Oppenheimer, Henry R., *Associate Professor of Finance and Insurance*, 1987. B.A., 1972, University of Rochester; M.S., 1974, Ph.D., 1979, Purdue University.

★Ordoñez, Margaret, *Professor of Textiles, Fashion Merchandising, and Design* 2003, 1988. B.S., 1961, M.S., 1968, University of Tennessee; Ph.D., 1978, Florida State University.

★Overton, Craig E., *Professor of Management*, 1981, 1969. B.S., 1965, M.B.A., 1967, Northeastern University; Ph.D., 1971, University of Massachusetts.

★Oviatt, Candace A., *Professor of Oceanography*, 1982, 1970. B.S., 1961, Bates College; Ph.D., 1967, University of Rhode Island.

★Owens, Norma J., *Professor of Pharmacy Practice*, 1996, 1982. B.S., 1977, University of Arizona; Pharm.D., 1979, Philadelphia College of Pharmacy and Science.

★Oxley, Jimmie Carol, *Professor of Chemistry*, 2002, 1995. B.A., 1970, University of California, San Diego; M.S., 1978, California State, Northridge; Ph.D., 1983, University of British Columbia.

★Padula, Cynthia, R.N., *Professor of Nursing*, 2004, 1985. B.S., 1978, Salve Regina University; M.S., 1980, Boston University; Ph.D., 1994, University of Connecticut.

Phag, Barbara, *Professor of Art*, 1998, 1985. B.A., 1972, Mount Holyoke College; M.A., 1975, New York University.

★Pakula, Lewis I., *Professor of Mathematics*, 1993, 1973. B.S., 1967, City College of New York; M.S., 1969, Ph.D., 1972, Massachusetts Institute of Technology.

★Palm, William J., *Professor of Mechanical Engineering and Applied Mechanics*, 1987, 1970. B.S., 1966, Loyola College; Ph.D., 1971, Northwestern University.

★Parang, Keyvavous, *Associate Professor of Biomedical and Pharmaceutical Sciences*, 2006, 2000. Pharm. D., 1989, University of Tehran; Ph.D., 1997, University of Alberta.

Parillo, Joseph M., *Associate Professor of Music*, 2002, 1997. B.S., 1975, Rhode Island College; M.M., 1989, New England Conservatory of Music.

★Park, Nan-Sook, *Associate Professor of Psychology*, 2005, 2000. B.A., 1990, M.A., 1992, Yonsei University; Ph.D., 2000, University of South Carolina.

★Pasquarella, Lynn, *Vice Provost for Academic Affairs, Professor of Philosophy*, 1996, 1986. B.A., 1980, Mount Holyoke College; Ph.D., 1985, Brown University.

Patnode, Martha S., *Professor of Nutrition and Food Science, Cooperative Extension*, 2002, 1972. B.S., 1968, M.S., 1976, University of Rhode Island.

★Paton, Peter W.C., *Professor of Natural Resources Science*, 2006, 1995. B.S., 1978, Lewis and Clark College; M.S., 1985, Colorado State University; Ph.D., 1994, Utah State University.

★Peckham, Joan M., *Professor of Computer Science*, 2002, 1990. B.S., 1970, State University of New York, Albany; M.S., 1976, M.S., 1985, Ph.D., 1990, University of Connecticut.

★Pegueros, Rosa Maria, *Associate Professor of History*, 2002, 1993. B.A., 1976, University of San Francisco; J.D., 1984, People's College of Law, Los Angeles; M.A., 1989, Ph.D., 1998, University of California, Los Angeles.

★Pennell, Michael C., *Assistant Professor of Writing and Rhetoric*, 2005. B.S., 1998, Eastern Michigan University; M.A., 2000, Ph.D., 2005, Purdue University.

★Peters, Calvin B., *Professor of Sociology*, 1991, 1978. B.A., 1971, Westmont College; M.A., 1973, Ph.D., 1977, University of Kentucky.

★Peterson, John F., Jr., *Professor of Philosophy*, 1979, 1964. A.B., 1959, Boston College; Ph.D., 1965, Indiana University.

Peterson, Katherine, *Assistant Professor of Fisheries, Animal and Veterinary Science*, 2005, 2000. B.S., 1982, Texas A&M University; M.S., 1986, Ph.D., 1990, Cornell University.

★Petro, Nicolai N., *Professor of Political Science*, 2001, 1991. B.A., 1980, M.A., 1982, Ph.D., 1984, University of Virginia.

Pintane, Maria Paz, *Instructor of Spanish*, 2000. Diplomado en Magisterio, Philology, 1989, Licenciado en Filosofía y Letras, Philology, 1993, University of Santiago de Compostela, Spain; M.A., 1995, University of Rhode Island.

★Poggie, John J., Jr., *Professor of Anthropology and Marine Affairs*, 1975, 1969. B.A., 1959, University of Connecticut; M.A., 1962, Louisiana State University; Ph.D., 1968, University of Minnesota.

★Pollart, Gene John, *Professor of Music*, 1983, 1976. B.M.E., 1963, M.M., 1967, University of Colorado; Ph.D., 1989, Columbia Pacific University.

★Pollnac, Richard B., *Professor of Anthropology and Marine Affairs*, 1982, 1973. B.A., 1968, Pennsylvania State University; Ph.D., 1972, University of Missouri.

★Preisser, Evan, *Assistant Professor of Biological Sciences*, 2006. B.A., 1993, Williams College; M.F.S., 1998, Yale School of Forestry and Environmental Studies; M.S., 2001, Ph.D., 2004, University of California, Davis.

★Prochaska, James Otto, *Professor of Psychology*, 1977, 1969. B.A., 1964, M.A., 1967, Ph.D., 1969, Wayne State University.

★Purnell, Richard F., *Professor of Education*, 1977, 1970. B.A., 1963, City College of New York; Ph.D., 1966, University of Texas.

★Quaino, Vanessa Wynder, *Associate Professor of Communication Studies*, 1999, 1990. B.A., 1981, Wheaton College; M.A., 1983, Western Illinois University; Ph.D., 1993, University of Massachusetts, Amherst.

★Quilliam, Brian, *Assistant Professor of Pharmacy Practice*, 2004, 2003. B.S., 1997, University of Rhode Island; Ph.D., 2001, Brown University.

★Quina, Kathryn K., *Professor of Psychology and Women's Studies*, 1991, 1973. B.A., 1969, Stetson University; M.A., 1971, Ph.D., 1973, University of Georgia.

★Ramsay, Glenworth A., *Professor of Economics*, 1993, 1973. B.A., 1967, Brown University; M.S., 1968, Ph.D., 1974, Boston College.

Ramsay, Karen M., *Associate Professor, Library*, 2006, 2001. B.A., 1974, M.L.S., 1977, University of Rhode Island.

★Ramstad, Yngve, *Professor of Economics*, 1994, 1982. B.S., 1963, Purdue University; M.A., 1971, Washington State University; Ph.D., 1981, University of California, Berkeley.

Rarick, Damon, *Assistant Professor of Languages*, 2004. B.A., 1988, Birmingham-Southern College; A.M., 1992, Ph.D., 1998, Brown University.

Rathemacher, Andrée J., *Associate Professor, Library*, 2005, 1995. A.B., 1992, Brown University; M.L.I.S., 1995, M.B.A., 2000, University of Rhode Island.

★Recksiek, Conrad W., *Professor of Fisheries, Animal and Veterinary Science*, 1980. A.B., 1966, San Jose State University; M.A., 1969, California State University, Humboldt; Ph.D., 1972, University of Maine.

★Reynolds, Nedra, *Professor of Writing and Rhetoric*, 2003, 1991. B.A., 1981, M.A., 1984, Emporia State University; Ph.D., 1991, Miami University, Ohio.

★Rhodes, Richard C., III, *Professor of Fisheries, Animal and Veterinary Science*, 1994, 1982. B.S., 1974, University of Delaware; M.S., 1977, Ph.D., 1980, Texas A&M University.

★Rice, Michael A., *Professor of Fisheries, Animal and Veterinary Science*, 2000, 1987. B.S., 1977, University of San Francisco; M.S., 1981, Ph.D., 1987, University of California, Irvine.

Richman, Gary, *Professor of Art*, 1987, 1967. B.A., 1964, Brooklyn College; M.F.A., 1966, Indiana University.

★Richmond, Jayne E., *Dean of University College and Associate Professor of Human Development and Family Studies*, 2001, 1986. B.A., 1978, M.Ed., 1980, Ed.S., 1980, Ph.D., 1982, University of Florida, Gainesville.

★Riebe, Deborah, *Professor of Kinesiology*, 2005, 2000, 1995. B.S., 1980, Springfield College; M.S., 1990, University of Rhode Island; Ph.D., 1995, University of Connecticut, Storrs.

★Rivero-Hudec, Mercedes A., *Associate Professor of Chemical Engineering*, 1997, 1991. B.S., 1977, Universidad Simon Bolivar; M.S., 1981, Ph.D., 1986, University of Pennsylvania.

★Robbins, Mark L., *Assistant Professor of Psychology*, 2004, 1999. B.S., 1984, University of Illinois; M.S., 1988, Ph.D., 1993, Rutgers—The State University of New Jersey.

★Roberts, Alison Wille, *Professor of Biological Sciences*, 2005, 1991. B.S., 1980, M.S., 1983, University of California, Davis; Ph.D., 1990, Texas Tech University.

★Rodgers, Robert L., *Professor of Biomedical and Pharmaceutical Sciences*, 1995, 1987. A.B., 1969, University of California, Berkeley; M.S., 1972, Oregon State University; Ph.D., 1977, University of Oklahoma.

★Rogers, Kenneth H., *Professor of French and Linguistics*, 1984, 1968. B.A., 1961, Boston University; M.A., 1963, Ph.D., 1970, Columbia University.

★Rogers, Margaret R., *Associate Professor of Psychology*, 2002, 1999. B.A., 1981, C.A.S., 1984, M.S., 1985, State University of New York, Albany; Ph.D., 1989, University of Nebraska-Lincoln.

★Roheim, Cathy R., *Professor of Environmental and Natural Resource Economics*, 2000, 1989. B.S., 1982, M.S., 1984, Montana State University; Ph.D., 1990, University of California, Davis.

★Rojas, Martha E., *Assistant Professor of English*, 2005. B.A., 1993, Harvard University; Ph.D., 2003, Stanford University.

★Rollo-Koster, Joelle, *Professor of History*, 2007, 1996. D.E.U.G., 1979, License, 1980, M.A. 1982, University of Nice, France; Ph.D., 1992, State University of New York, Binghamton.

Roman, Christopher N., *Assistant Professor of Oceanography*, 2006. B.S., 1997, Virginia Polytechnic Institute; M.S., 1999, University of California, San Diego; Ph.D., 2005, Massachusetts Institute of Technology and Woods Hole Oceanographic Institute.

★Rosen, Deborah E., *Professor of Marketing*, 2006, 1992. B.A., 1971, University of Wisconsin, Madison; M.B.A., 1982, Ph.D., 1992, University of Tennessee, Knoxville.

★Rosen, William M., *Professor of Chemistry*, 1982, 1970. B.S., 1963, University of California, Los Angeles; Ph.D., 1967, University of California, Riverside.

★Rosenbaum, Sarah, *Professor of Biomedical and Pharmaceutical Sciences*, 1998, 1987. B.Pharm., University of London; Ph.D., 1980, University of Liverpool.

★Rossby, Hans Thomas, *Professor of Oceanography*, 1975. B.S., 1962, Royal Institute of Technology, Sweden; Ph.D., 1966, Massachusetts Institute of Technology.

★Rossi, Joseph S., *Professor of Psychology*, 1997, 1985. B.A., 1975, Rhode Island College; M.A., 1980, Ph.D., 1984, University of Rhode Island.

★Rothstein, Lawrence, *Professor of Political Science*, 1985, 1976. B.A., 1966, Carleton College; J.D., 1969, University of Illinois Law School; Ph.D., 1976, University of Massachusetts.

★Rothstein, Lewis M., *Professor of Oceanography*, 2000, 1989. B.S., 1973, University of Bridgeport; M.A., M.S., 1975, University of Massachusetts, Amherst; M.S., 1979, Ph.D., 1983, University of Hawaii.

Rousseau, Carl-Ernst, *Associate Professor of Mechanical Engineering*, 2007

★Roush, Susan E., *Professor of Physical Therapy*, 2006, 1991. B.S., 1979, Ohio State University; M.S., 1983, Auburn University; Ph.D., 1990, University of Washington.

★Rowinski, Mark J., *Professor of Physical Therapy*, 1996, 1987. B.A., 1971, Marist College; Ph.D., 1976, Medical College of Georgia.

★Rowley, David C., *Associate Professor of Biomedical and Pharmaceutical Sciences*, 2007, 2001. B.S., 1990, Pennsylvania State University; Ph.D., 2001, University of California, San Diego.

★Roworth, Wendy W., *Professor of Art History and Women's Studies*, 1988, 1976. B.A., 1967, Bryn Mawr College; M.A., 1968, Harvard University; Ph.D., 1977, Bryn Mawr College.

★Ruemmle, Bridget A., *Professor of Plant Sciences*, 2006, 1991. B.S., 1980, University of Wisconsin, River Falls; M.S., 1984, Ph.D., 1989, University of Minnesota.

★Rusnock, Andrea A., *Associate Professor of History*, 2003, 2000. B.A., 1982, Brown University; M.A., 1985, Ph.D., 1990, Princeton University.

★Sadd, Martin H., *Professor of Mechanical Engineering and Applied Mechanics*, 1984, 1979. B.S., 1966, M.S., 1967, University of Illinois; Ph.D., 1971, Illinois Institute of Technology.

★Salazar, Abran J., *Professor of Communication Studies*, 2003, 1999. B.S., 1986, M.A., 1987, Eastern New Mexico University; Ph.D., 1991, University of Iowa.

★Sama, Catherine, *Associate Professor of Italian*, 2003, 1997. B.A., 1985, University of Virginia; Ph.D., 1995, Brown University.

Savage, Brian, *Assistant Professor of Geosciences*, 2006. B.S., 1998, University of California, Berkeley; M.S., 2000, Ph.D., 2004, California Institute of Technology.

★Schnier, Kurt E., *Assistant Professor of Environmental and Natural Resource Economics*, 2003. B.S., 1995, University of California, San Diego; M.A., 1999, University of Pennsylvania; M.A., 2000, Ph.D., 2003, University of Arizona.

★Scholl, Richard W., *Professor of Management*, 1990, 1979. B.A., 1972, United States Naval Academy; M.B.A., 1975, San Diego State University; Ph.D., 1979, University of California, Irvine.

★Schwartz, Marie J., *Professor of History, 2006, 1995. B.A., 1984, M.A., 1987, George Mason University; Ph.D., 1994, University of Maryland.*

★Schwartz-Barcott, Donna, R.N., *Professor of Nursing, 1992, 1975. B.S., 1966, University of Washington; M.S., 1970, M.A., 1972, Ph.D., 1978, University of North Carolina.*

★Schwarzbach, Henry R., *Professor of Accounting, 1988, 1976. A.B., 1968, University of California; M.B.A., 1972, University of Hawaii; D.B.A., 1976, University of Colorado; C.P.A.*

★Schwegler, Robert A., *Professor of Writing and Rhetoric, 1991, 1978. B.A., 1968, Hope College; M.A., 1970, Ph.D., 1978, University of Chicago.*

★Seemann, Jeffrey R., *Dean of the College of the Environment and Life Sciences and Professor of Cell and Molecular Biology, 2001. B.A., 1977, Oberlin College; Ph.D., 1982, Stanford University.*

★Seibel, Brad A., *Assistant Professor of Biological Sciences, 2003. B.A., 1992, Ph.D., 1998, University of California, Santa Barbara.*

★Seitsinger, Anne M., *Associate Professor of Education, 2005, 1999. B.S., 1976, Bridgewater State College; M.Ed., 1993, Rhode Island College; Ph.D., 1999, University of Rhode Island and Rhode Island College.*

★Sendag, Resit, *Assistant Professor of Electrical and Computer Engineering, 2004. B.S.E.E., 1994, Hacettepe University; M.S.E.E., 1977, Cukurova University; Ph.D., 2003, University of Minnesota.*

★Shaikh, Zahir A., *Professor of Biomedical and Pharmaceutical Sciences, 1986, 1982. B.Sc., 1965, M.Sc., 1967, University of Karachi; Ph.D., 1972, Dalhousie University.*

★Shamoon, Linda Kaplan, *Professor of Writing and Rhetoric, and Director of the Faculty Institute on Writing, 1995, 1967. B.S., 1964, Purdue University; M.A., 1967, Tufts University.*

★Sheinin, Daniel A., *Associate Professor of Business Administration, 2005, 2002. B.A., 1983, Amherst College; M.M.Mkt., 1988, Northwestern University; Ph.D., 1994, Columbia University.*

★Shen, Yang, *Associate Professor of Oceanography, 2003, 1998. B.S., 1984, Nanjing University, China; M.Sc., 1992, Ph.D., 1995, Brown University.*

Sheridan, Richard E., *Associate Professor of Community Planning and Landscape Architecture, 2005, 1995. B.L.A., 1971, University of Georgia; M.L.A., 1973, University of Massachusetts.*

★Shim, Minsuk, *Associate Professor of Education, 2005, 1997. B.A., 1982, Seoul National University; M.A., 1990, Ph.D., 1995, University of British Columbia.*

★Shin, Seung Kyoon, *Assistant Professor of Management Information Systems, 2002. B.S., 1992, Kyung-Hee University, Seoul Korea; M.I.S., 1998, Ph.D., 2002, State University of New York at Buffalo.*

★Shukla, Arun, *Simon Ostrach Professor of Mechanical Engineering and Applied Mechanics, 1997, 1981. B.S., 1976, Indian Institute of Technology; M.S., 1978, Ph.D., 1981, University of Maryland.*

★Silvia, Antone J., *Professor of Communication Studies, 1999, 1988. B.A., 1974, University of Rhode Island; M.A., 1976, Ph.D., 1993, University of Birmingham, England.*

★Simeoni, Angelo E., Jr., *Professor of Community Planning and Landscape Architecture, 1999, 1987. B.S., 1976, University of Rhode Island; M.L.A., 1979, Cornell University.*

★Singer, Jay, *Professor of Communicative Disorders, 2001, 1977. B.A., 1971, Brooklyn College; M.A., 1972, University of Florida; Ph.D., 1976, Case Western Reserve University.*

Slitt, Angela L., *Assistant Professor of Biological and Pharmaceutical Sciences, 2006. B.S., 1995, Ph.D., 2000, University of Connecticut.*

★Smith, David C., *Associate Professor, Graduate School of Oceanography, 2003, 1997. B.S., 1984, California State University, Long Beach; Ph.D., 1994, Scripps Institution of Oceanography, University of California, San Diego.*

★Smith, James Lewis, *Professor of Chemistry, 2002, 1995. B.Sc., 1971, M.Sc., 1974, University of Puget Sound; Ph.D., 1980, University of British Columbia.*

★Sodhi, Manbir S., *Professor of Industrial and Systems Engineering, 2001, 1991. B.Prod.Eng., 1983; Jadavpur University; M.S., 1988, Ph.D., 1991, University of Arizona.*

★Sparks, Jacqueline Ann, *Assistant Professor of Human Development, 2004. B.S., 1985, M.S., 1992, University of New Hampshire; Ph.D., 2002, Nova Southeastern University.*

★Spaulding, Malcolm L., *Professor of Ocean Engineering, 1983, 1973. B.S., 1969, University of Rhode Island; M.S., 1970, Massachusetts Institute of Technology; Ph.D., 1972, University of Rhode Island.*

★Specker, Jennifer L., *Professor of Oceanography and Biological Sciences, 1993, 1984. B.A., 1973, Miami University; M.A., 1977, Ph.D., 1980, Oregon State University.*

★Sperry, Jay F., *Professor of Cell and Molecular Biology, 1997, 1977. B.S., 1968, M.S., 1971, University of Nebraska; Ph.D., 1974, University of Kansas.*

★Spivack, Arthur J., *Professor of Oceanography, 2002, 2000. B.S., 1980, Massachusetts Institute of Technology; Ph.D., 1986, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution.*

★Starkey, James L., *Professor of Economics, 1992, 1967. B.S., 1964, Ph.D., 1971, Boston College.*

Stauffer, John H., *Assistant Professor of Military Science and Leadership, 2000. B.A., 1980, Millersville University, Pennsylvania.*

★Stein, Karen F., *Professor of English and Women's Studies, 1992, 1968. B.A., 1962, Brooklyn College; M.A., 1966, Pennsylvania State University; Ph.D., 1982, University of Connecticut.*

★Stepanishen, Peter R., *Professor of Ocean Engineering, 1982, 1974. B.S., 1963, Michigan State University; M.S., 1966, University of Connecticut; Ph.D., 1969, Pennsylvania State University.*

★Sterne, Evelyn, *Associate Professor of History, 2005, 1999. B.A., 1989, Yale University; M.A., 1994, Ph.D., 1999, Duke University.*

★Stevenson, John F., *Professor of Psychology, 1989, 1973. B.A., 1965, University of Rochester; Ph.D., 1974, University of Michigan.*

★Steyerl, Albert, *Professor of Physics, 1987. D.Sc., 1966, Massachusetts Institute of Technology; Ph.D., 1971, Technische Universität, Munich.*

★Stolt, Mark H., *Associate Professor of Natural Resources Science, 2002, 1997. B.S., 1982, M.S., 1986, University of Maryland; Ph.D., 1990, Virginia Polytechnic Institute and State University.*

★Strom, Sharon Hartman, *Professor of History and Women's Studies, 1982, 1969. B.A., 1962, Whittier College; M.A., 1968, Ph.D., 1969, Cornell University.*

★Sullivan, Mary C., *Professor of Nursing, 2006, 1998. B.S.N., 1975, Salve Regina College; M.S.N., 1981, University of Nebraska; Ph.D., 1994, University of Rhode Island.*

★Sullivan, William Michael, *Professor of Plant Sciences, 2000, 1981. B.S., 1975, University of Rhode Island; M.S., 1978, University of Vermont; Ph.D., 1981, University of Nebraska.*

★Sun, Gongqin, *Associate Professor of Cell and Molecular Biology, 2005, 2000. B.S., 1983, Nankai University, Tianjin, PRC; M.S., 1988, Ph.D., 1992, University of Nebraska, Lincoln.*

★Sun, Yan, *Assistant Professor of Electrical, Computer and Biomedical Engineering, 2006, 2004. B.S., 1998, Beijing University, Beijing, PRC; M.S., 2003, Ph.D., 2004, University of Maryland.*

★Sun, Ying, *Professor of Electrical and Biomedical Engineering, 2000, 1985. B.S., 1978, National Taiwan University; M.S., 1982, University of Rhode Island; Ph.D., 1985, Worcester Polytechnic Institute.*

★Sunak, Harish R.B., *Professor of Electrical Engineering, 1991, 1985. B.E., 1969, University of Liverpool; Ph.D., 1974, University of Southampton.*

★Suter, Ann C., *Professor of Classics, 2004, 1987. A.B., 1959, Radcliffe College; M.A., 1979, Ph.D., 1984, Princeton University.*

★Sutinen, Jon G., *Professor of Environmental and Natural Resource Economics, 1988, 1973. A.A., 1962, Lower Columbia College; B.S., 1964, San Francisco State College; Ph.D., 1973, University of Washington.*

Suzawa, Gilbert S., *Professor of Economics, 2002, 1971. B.A., 1965, M.A., 1967, University of Hawaii; Ph.D., 1973, Brown University.*

★Swallow, Stephen K., *Professor of Environmental and Natural Resource Economics, 1999, 1988. B.S., 1982, Cornell University; M.S., 1986, Ph.D., 1988, Duke University.*

Swan, M. Beverly, *Provost and Vice President for Academic Affairs and Associate Professor of English, 1981, 1974. B.A., 1963, M.A., 1966, University of Rhode Island; Ph.D., 1977, Boston University.*

★Swaszek, Peter F., *Professor of Electrical Engineering, 2001, 1984. B.S.E.E., 1978, New Jersey Institute of Technology; Ph.D., 1982, Princeton University.*

★Swift, Judith M., *Professor of Theatre and Communication Studies*, 1986, 1971. B.A., 1968, M.A., 1971, University of Rhode Island.

★Swonger, Alvin K., *Professor of Biomedical and Pharmaceutical Sciences*, 1985, 1971. B.A., 1967, Boston University; Ph.D., 1971, Dartmouth College.

★Taggart, David G., *Professor of Mechanical Engineering and Applied Mechanics*, 2002, 1989. B.S., 1978, University of Delaware; M.S., 1981, Rensselaer Polytechnic Institute; Ph.D., 1988, University of Pennsylvania.

Takasawa, Manabu, *Associate Professor of Music*, 2007, 2001. B.A., 1987, Witman College; M. A., 1989, Manhattan School of Music; D.M.A., 1998, University of Maryland.

Taylor, Scott, *Assistant Professor of Business Administration*, 2007. B.S., 1989, The Pennsylvania State University; M.B.A., 1996, Colgate Darden Graduate School of Business.

★Thiem, Leon T., *Associate Professor of Civil and Environmental Engineering*, 1989, 1983. B.S., 1973, University of Massachusetts; M.S., 1974, University of Illinois, Urbana; Ph.D., 1982, University of Missouri, Columbia.

★Thoma, Lubos, *Associate Professor of Mathematics*, 2007, 2001. M.S., 1988, Czech Technical University; Ph.D., 1996, Emory University.

★Thomas, Natacha E., *Assistant Professor of Civil Engineering*, 2002. B.S., 1994, Universite D'Etat D'Haitt; M.S., 1989, University of Maryland; Ph.D., 1994, University of Illinois.

★Thompson, Robert Hugh, *Associate Professor of Marine Affairs*, 2007, 2000. B.A., 1982, Saint Mary's College; J.D., 1987, M.C.P., 1992, Ph.D., 1997, University of California, Berkeley.

★Thornber, Carol, *Assistant Professor of Biological Sciences*, 2004. B.S., 1995, Stanford University; Ph.D., 2001, University of California, Santa Barbara.

★Thurston, Gary, *Professor of History*, 1984, 1966. B.A., 1962, Grinnell College; M.A., 1965, Ph.D., 1973, Columbia University.

★Torrens, Kathleen M., *Assistant Professor of Communication Studies*, 2004. B.A., 1990, M.A., 1993, University of Colorado, Boulder; Ph.D., 1997, University of Minnesota.

★Travisano, Richard Vito, *Professor of Sociology and Anthropology*, 1998, 1969. B.A., 1961, University of Connecticut; M.A., 1967, Ph.D., 1973, University of Minnesota.

★Trimm, Ryan S. *Associate Professor of English*, 2007, 2001. B.A., 1991, University of Alabama; M.A., 1994, Ph.D., 2001, University of North Carolina, Chapel Hill.

★Trostle Brand, Susan L., *Professor of Education*, 2001, 1985. B.S., 1973, Indiana University of Pennsylvania; M.Ed., 1975, West Virginia University; D.Ed., 1984, Pennsylvania State University.

★Trubiano, Mario F., *Professor of Spanish*, 1995, 1979. B.A., 1968, University of Massachusetts; M.Ed., 1969, Boston College; M.A., 1974, Ph.D., 1979, University of Massachusetts.

★Tsiatas, George, *Professor of Civil and Environmental Engineering*, 1998, 1988. B.S., 1979, National Technical University of Athens, Greece; M.S., 1982, Ph.D., 1984, Case Western Reserve University.

★Tufts, Donald W., *Professor of Electrical Engineering*, 1967. B.A., 1955, Williams College; S.M., 1958, Sc.D., 1960, Massachusetts Institute of Technology.

★Tyce, Robert C., *Professor of Ocean Engineering and Oceanography*, 1992, 1983. B.A., 1969, University of California, San Diego; Ph.D., 1976, Scripps Institution of Oceanography, University of California, San Diego.

★Tyler, Gerry Ruth Sack, *Professor of Political Science*, 1993, 1966. B.A., 1960, University of Pittsburgh; M.A., 1961, Ph.D., 1972, Yale University.

★Vaccaro, Richard J., *Professor of Electrical Engineering*, 1993, 1983. B.S.E.E., M.S.E.E., 1979, Drexel University; Ph.D., 1983, Princeton University.

★Van Wyk, Judy A., *Associate Professor of Sociology and Anthropology*, 2006, 2000. B.A., 1993, University of Oklahoma; M.A., 1995, Ph.D., 1999, University of Tennessee.

★Varki, Sajeev, *Professor of Marketing*, 2007, 1998. B.Tech., 1984, Indian Institute of Technology; M.B.A., 1986, Indian Institute of Management; Ph.D., 1996, Vanderbilt University.

★Vaughn, Sue Fisher, *Associate Professor of English and of Writing and Rhetoric*, 1995, 1966. B.S., 1964, Kutztown State College; M.A., 1966, Miami University, Ohio.

★Veeger, Anne, *Associate Professor of Geosciences*, 1997, 1989. B.S., 1983, University of Pittsburgh; M.S., 1986, Syracuse University; Ph.D., 1991, University of Arizona.

★Velicer, Wayne F., *Professor of Psychology*, 1982, 1973. B.S., 1966, University of Wisconsin; M.S., 1969, Ph.D., 1972, Purdue University.

★Vetter, Frederick J., *Associate Professor of Electrical and Biomedical Engineering*, 2006, 2002. B.S., 1984, M.S., 1988, M.B.A., 1989, University of California, Davis; M.S., 1994, Ph.D., 1999, University of California, San Diego.

★Veyera, George E., *Professor of Civil and Environmental Engineering*, 2002, 1988. B.S., 1978, University of Rhode Island; M.S., 1980, Ph.D., 1985, Colorado State University.

★Vlau, Paula A., *Associate Professor of Nursing*, 2004, 1992. B.S., 1969, University of Rhode Island; M.S., 1983, Ph.D., 1991, University of Connecticut.

★Vittimberga, Bruno M., *Professor of Chemistry*, 1971, 1961. B.S., 1952, Massachusetts Institute of Technology; M.S., 1954, University of Rhode Island; Ph.D., 1957, University of Illinois.

Vocino, Michael, Jr., *Professor, Library and Political Science*, 1993, 1980. B.S., 1968, Boston University; M.L.S., 1973, M.A., 1981, University of Rhode Island; C.G.S., 1999, Universiteit van Amsterdam.

von Reinhart, Walter, *Associate Professor of German*, 2002, 1990. B.A., 1983, Universitat Mannheim; M.A., 1986, University of Michigan; Ph.D., 1996, Brown University.

★Walls, Theodore A., *Assistant Professor of Psychology*, 2004. B.A., 1990, Bates College; M.A., 1997, Ph.D., 2002, Boston University.

★Walton, Jean, *Professor of English*, 2003, 1993. B.A., 1980, Simon Fraser University; M.A., 1983, Ph.D., 1988, State University of New York, Buffalo.

★Wang, Jyh-Hone, *Professor of Industrial and Systems Engineering*, 2007, 1995. B.S., 1980, Tunghai University; M.S., 1986, Ph.D., 1989, University of Iowa.

★Wang, Yeqiao, *Professor of Natural Resources Science*, 2005, 2001. B.S., 1982, Northeast Normal University, China; M.S., 1987, Changchun Institute of Geography, Chinese Academy of Sciences; M.S., 1992, Ph.D., 1995, University of Connecticut.

Warner, Pamela J., *Assistant Professor of Art and Art History*, 2007. B.A., 1992, University of Michigan; M.A., 1996, Ph.D., 2005, University of Delaware.

★Watts, D. Randolph, *Professor of Oceanography*, 1988, 1974. B.A., 1966, University of California; Ph.D., 1973, Cornell University.

Webb, Jacqueline F., *Professor of Biological Sciences*, 2006. B.S., 1979, Cornell University; Ph.D., 1988, Boston University.

★Weisbord, Robert G., *Professor of History*, 1973, 1966. B.A., 1955, New York University; M.A., 1960, Ph.D., 1966, New York University Graduate School.

Weiss, Amy L., *Professor of Communicative Disorders*, 2007, 2004. B.A., 1974, State University of New York at Buffalo; M.A., 1976, University of Illinois, Champaign; Ph.D., 1983, Purdue University.

★Welters, Linda M., *Professor of Textiles, Fashion Merchandising, and Design*, 1994, 1981. B.S., 1971, College of St. Catherine; M.A., 1973, Colorado State University; Ph.D., 1981, University of Minnesota.

★Wenisch, Fritz, *Professor of Philosophy*, 1980, 1971. L.B.A., 1964, Salzburg, Austria; Ph.D., 1968, University of Salzburg.

★Westin, Stuart A., *Professor of Management Science*, 1996, 1983. B.B.A., 1977, M.S.B.A., 1978, Ph.D., 1983, University of Massachusetts.

★White, Clement A., *Professor of Spanish*, 2005, 1988. A.A., 1966, University of the Virgin Islands; B.A., 1968, M.A., 1976, Kent State University; Ph.D., 1987, Brown University.

★Whitworth, Ulysses G., Jr., *Assistant Professor of Fisheries, Animal and Veterinary Science*, 1997, 1992. B.S., 1974, D.V.M., 1976, Tuskegee Institute; M.P.H., 1983, University of North Carolina.

★Wilga, Cheryl D., *Associate Professor of Biological Sciences*, 2005, 2000. B.Sc., 1992, Ph.D., 1997, University of South Florida.

★Willey Temkin, Cynthia, *Professor of Pharmacy Practice*, 2001, 1987. B.A., 1977, Wellesley College; M.A., 1979, M.S., 1981, Ph.D., 1985, University of North Carolina.

★Williams, Travis D., *Assistant Professor of English*, 2006. B.A., 1996, University of California, Berkeley; 1998, Oxford University; Ph.D., 2006, University of California, Berkeley

★Willis, George H., *Professor of Education*, 1981, 1971. A.B., 1964, Hamilton College; M.A.T., 1965, Harvard University; Ph.D., 1971, Johns Hopkins University.

★Willis, W. Grant, *Professor of Psychology*, 1995, 1987. A.B., 1977, M.A., 1980, Ohio University; Ph.D., 1984, University of Georgia.

Wills, V. Sheri, *Associate Professor of Art*, 2002, 1996. B.A., 1987, University of California, San Diego; M.F.A., 1992, M.A., 1995, School of the Art Institute of Chicago.

★Wimbush, Mark, *Associate Dean of the Graduate School of Oceanography and Professor of Oceanography*, 1990, 1977. B.A., 1957, Oxford University; M.A., 1963, University of Hawaii; M.A., 1964, Oxford University; Ph.D., 1969, Scripps Institution of Oceanography, University of California, San Diego.

★Wishner, Karen, *Professor of Oceanography*, 1993, 1980. B.A., 1972, University of Chicago; Ph.D., 1979, Scripps Institution of Oceanography, University of California, San Diego.

Wittwer, Christian, *Associate Professor of Theatre*, 1988, 1982. B.A., 1969, Emory and Henry College; M.F.A., 1973, University of Georgia, Athens.

★Wood, Mark D., *Professor of Psychology*, 2006, 1998. B.A., 1990, Arizona State University; M.A., 1993, Ph.D., 1996, University of Missouri, Columbia.

★Wood, Stephen C., *Professor of Communication Studies*, 1995, 1982. B.S., 1969, California State Polytechnic University; M.A., 1978, University of Maine, Orono; Ph.D., 1984, University of Maryland.

Wortman, Bryna M., *Associate Professor of Theatre*, 2006, 1999. B.A., Barnard College, Columbia University; M.F.A., 1997, Brooklyn College, City University of New York.

★Wright, Raymond M., *Distinguished Engineering Professor of Civil and Environmental Engineering*, 1997, 1981. B.S., 1973, Tufts University; M.Eng., 1978, Ph.D., 1981, Pennsylvania State University.

★Wu, Li, *Associate Professor of Mathematics*, 2005, 2000. B.S., 1988, Nankai University; M.S., 1995, Chinese Academy of Sciences; Ph.D., 1998, University of Wyoming.

Wyant, Sarina Rodrigues, *Assistant Professor, Library*, 2002. B.S., 1983, Texas A&M; M.S.L.I.S., 1999, University of Rhode Island.

★Xiao, Jingjian, *Professor of Human Development and Family Studies*, 2001, 1992. B.S., 1982, M.S., 1986, Zhongnan University of Finance and Economics; Ph.D., 1991, Oregon State University.

Xu, Furong, *Assistant Professor of Kinesiology*, 2007. B.S., 1996, East China Normal University; Ph.D., 2007, University of Georgia.

Yager, Paul H., *Professor of Military Science and Leadership*, 2006. B.A., 1987, Sonoma State University. M.P.A., 2000, Wilmington College.

★Yan, Bingfang, *Professor of Biomedical and Pharmaceutical Sciences*, 2004, 1997. D.V.M., 1982, Huazhong Agricultural University School of Veterinary Medicine; M.S., 1985, Nanjing Agricultural University School of Veterinary Medicine; Ph.D., 1994, University of Kansas Medical Center.

★Yang, Qing, *Professor of Electrical and Computer Engineering*, 1997, 1988. B.S., 1982, Huazhong University of Science and Technology; M.A.Sc., 1985, University of Toronto; Ph.D., 1988, University of Southwestern Louisiana.

★Yang, Sze Cheng, *Professor of Chemistry*, 1990, 1980. B.S., 1967, National Taiwan University; M.S., 1970, Ph.D., 1973, Columbia University.

★Yeaw, Evelyn, R.N., *Professor of Nursing*, 2003, 1985. B.S., 1968, University of Rhode Island; M.S., 1970, Ph.D., 1983, Boston College.

★Yoon, Mirang, *Assistant Professor of Physics*, 2000. A.B., 1992, Cornell University; Ph.D., 1998, Massachusetts Institute of Technology.

★Young, Betty, *Professor of Education*, 2001, 1989. B.S., 1969, Northern Illinois University; M.Ed., 1982, Ph.D., 1988, University of California, Los Angeles.

★Yu, Tong, *Associate Professor of Finance*, 2007, 2002. B.S., 1990 Fudan University, Shanghai, China; M.B.A., 1996, Georgia State University; Ph.D., 2001, University of South Carolina.

★Zawia, Nasser H., *Professor of Biomedical and Pharmaceutical Sciences*, 2007, 1999. B.S., 1984, University of Massachusetts; M.S., 1986, Loma Linda University; Ph.D., 1989, University of California.

★Zeyl, Donald J., *Professor of Philosophy*, 1984, 1971. B.A., 1966, University of Toronto; Ph.D., 1972, Harvard University.

★Zhang, Zongqin, *Professor of Mechanical Engineering*, 2000, 1991. B.S., 1982, Huashong University of Science and Technology; M.S., 1987, Ph.D., 1990, Duke University.

★Zia, Hosseini, *Professor of Biomedical and Pharmaceutical Sciences*, 1995, 1986. Pharm. D., 1963, University of Isfahan; M.S., 1966, University of Rhode Island; Ph.D., 1969, University of Georgia.

★Zucker, Norman L., *Professor of Political Science*, 1969, 1966. B.A., 1954, M.A., 1956, Ph.D., 1960, Rutgers-The State University of New Jersey.

**Adjunct Faculty**

★Denotes graduate faculty

† Denotes professors in residence (graduate faculty able to serve as major professors)

Abbott, Ann A., *Adjunct Instructor of Nursing*, 2000. M.S., 1986, University of Kansas.

★Abedon, David H., *Adjunct Associate Professor of Natural Resources Science*, 2006, 1995. M.A., 1972, University of Rhode Island.

★Abrams, David B., *Adjunct Professor of Psychology*, 1986. Ph.D., 1981, Brown University.

Aguero, Max F., *Adjunct Professor of Environmental and Natural Resource Economics*, 1989. Ph.D., 1983, University of Rhode Island.

Ahmed, Aftab, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2004. Ph.D., 1989 University of Karachi, Pakistan.

Ahmed, Mohiuddin, *Adjunct Professor of Psychology*, 2004. Ph.D., 1969, University of Pittsburgh.

Alario, Anthony J., *Adjunct Associate Professor of Nursing*, 1997. M.D., 1979, University of Massachusetts School of Medicine.

Aldrich, Dianne J., *Adjunct Instructor of Nursing*, 1995. M.S., 1992, University of Florida, Gainesville.

Aldrovani, Andrea, *Adjunct Instructor of Nursing*, 1998. M.S.N., 1982, Boston College.

Alkatib, Eid A., *Adjunct Assistant Professor of Civil and Environmental Engineering*, 1991. Ph.D., 1986, University of Rhode Island.

Allen, Melody, *Adjunct Instructor of Library and Information Studies*, 1983. M.S., 1975, Simmons College.

Allen, Paul, *Adjunct Assistant Professor of Film Media*, 2004. M.F.A., 1976, University of Southern California.

Almeida, Pamela G., *Adjunct Instructor of Nursing*, 1998. M.S., 1993, Northeastern University.

★Aloia, Mark, *Adjunct Assistant Professor of Psychology*, 1999. Ph.D., 1996, University of Mississippi.

★Alsultan, Muhammed S., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2004. Ph.D., 2003, University of Rhode Island.

Alteri, Catherine Gaudiano, *Adjunct Assistant Professor of Nursing*, 2005. M.S., 1987, Boston University.

Amos, Duncan, *Adjunct Professor of Fisheries, Animal and Veterinary Science*, 1982.

Andersen, Peder, *Adjunct Assistant Professor of Environmental and Natural Resource Economics*, 1981. Cand. Ocean., 1979, University of Aarhus, Denmark.

Anderson, Bradley, *Adjunct Associate Professor of Sociology*, 2002. Ph.D., 1984, Iowa State University.

Anderson, Jean, *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1981, University of Rhode Island.

Anderson, Peter D., *Adjunct Associate Professor of Pharmacy Practice*, 2003. Pharm.D., 1998, University of Rhode Island.

Andreev, Oleg A., *Adjunct Professor of Physics*, 2004. Ph.D., 1990, Moscow Institute of Physics and Technology.

Angelini, Diane J., *Adjunct Associate Professor of Nursing*, 2005, 1991. Ed.D., 1992, Boston University School of Education.

★Apostol, Michael C., *Adjunct Associate Professor of Civil and Environmental Engineering*, 1978. Ph.D., 1974, State University of New York, Buffalo.

Archer, Janice E., *Adjunct Instructor of Nursing*, 1989. M.S., 1981, University of Rhode Island.

Arieta, Jacqueline M., *Adjunct Instructor of Nursing*, 1992. M.S., 1989, University of Rhode Island.

★Arruda, James, *Adjunct Assistant Professor of Psychology*, 1995. Ph.D., 1994, University of Rhode Island.

Ascoli, Charlene, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1990. B.S., 1986, Rhode Island College.

Aspri, Robert H., *Adjunct Assistant Professor, Library*, 2006. M.L.S., 1976, University of Rhode Island.

Asselin, Marilyn E., *Adjunct Assistant Professor of Nursing*, 2002. Ph.D., 1998, University of Rhode Island.

★Aucoin, Wayne J., *Adjunct Assistant Professor of Clinical Laboratory Science*, 1995. M.S., 1984, Salve Regina University.

★Augeri, David M., *Adjunct Assistant Professor of Natural Resources Science*, 2006. Ph.D., 2005, University of Cambridge, U.K.,

August, Mark R., *Adjunct Assistant Professor of Communication Studies*, 1998. M.A., 1992, Emerson College.

Auld, Dianne B., *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1993. B.S., 1983, Rhode Island College.

Avery, Ann Z., *Adjunct Instructor of Nursing*, 1993. M.S., 1984, Syracuse University.

Badger, James M., *Adjunct Assistant Professor of Nursing*, 2005, 2002. Ph.D., 2003, University of Rhode Island.

★Badorek, Diane L., *Adjunct Assistant Professor of Civil and Environmental Engineering*, 1985. Ph.D., 1982, University of Missouri.

Bailey, Jr., Edgar C., *Adjunct Instructor of Library and Information Studies*, 2004. M.L.S., 1975, Rutgers University Graduate School of Library Service.

Baird, Jerold A., *Adjunct Professor of Civil and Environmental Engineering*, 2005. Ph.D., 1980, University of Rhode Island.

Baker, Brydie Jo, *Adjunct Assistant Professor of Nursing*, 2002. M.N., 1970, University of California, Los Angeles.

★Balkovic, Edward, *Adjunct Associate Professor of Clinical Laboratory Science*, 2003, 1990. Ph.D., 1984, Baylor College of Medicine.

Balmforth, Maxon G., *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science*, 1984. D.V.M., 1972, University of Pennsylvania.

★Banerjee, Pranab K., *Adjunct Professor of Electrical Engineering*, 1980. Ph.D., 1971, University of Rhode Island.

★Barber, Norman L., *Adjunct Assistant Professor of African and African-American Studies*, 2003. Ed.D., 2002, University of Massachusetts, Amherst.

Barbour, Paul, *Adjunct Associate Professor of Pharmacy Practice*, 2003, 1997. M.S., 1985, Northeastern University.

★Barker, Barbara E., *Adjunct Associate Professor of Clinical Laboratory Science*, 1988. Ph.D., 1965, University of Rhode Island.

Barnett, Stanley, *Adjunct Professor of Pharmaceutics*, 1992. Ph.D., 1963, University of Pennsylvania.

★Barrach, Hans-Jurgen, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 1990. M.D., 1971, Ph.D., 1973, Free University of Berlin, West Germany.

★Bartels, William, *Adjunct Associate Professor of Philosophy*, 2000. Ph.D., 1985, Rice University.

Barton, Holly H., *Adjunct Instructor of Library and Information Studies*, 2004. M.L.I.S., 1991, University of Rhode Island.

Barton-Burke, Margaret, *Adjunct Associate Professor of Nursing*, 2005. Ph.D., 2002, University of Rhode Island.

Basch, Ethan M., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. M.D., 1998, Harvard Medical School.

Bascom, David D., *Adjunct Assistant Professor of Plant Sciences*, 1983. B.S., 1965, University of Rhode Island.

★Batson, Trent, *Adjunct Professor of Communication Studies*, 2002. Ph.D., 1974, George Washington University.

Baumhover, Lisa, *Adjunct Instructor of Nursing*, 2007. M.S., 2000, University of Rhode Island.

Bauer, Mark, *Adjunct Professor of Nursing*, 2003, 2007. M.D., 1982, University of Pennsylvania.

Bauer, Michele, *Adjunct Instructor of Nursing*, 2001. M.S., 1999, University of Rhode Island.

★Beagle, Robert M., *Adjunct Professor of Communication Studies*, 2001. M.A., 1967, Pennsylvania State University.

Beauchesne, Karen S., *Adjunct Assistant Professor of Nursing*, 1992. M.S.N., 1980, University of Washington.

Beckert, Thomas E., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2001. Ph.D., 1995, Eberhard-Karls University, Tübingen.

Belstrom, Dea, *Adjunct Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 2001, University of Rhode Island.

Bellinger, Christina, *Adjunct Instructor of Library and Information Studies*, 1991. M.L.S., 1978, Simmons College.

Bennett, Pamela J., *Adjunct Instructor of Nursing*, 2001. M.S., 1994, University of Rhode Island.

★Berg, Marie, *Adjunct Assistant Professor of Nursing*, 2002. Ph.D., 2002, University of Uppsala, Sweden.

Bergh, Ingrid, *Adjunct Associate Professor of Nursing*, 2005. M.D., 2003, Göteborg University, Sweden.

Bergstrom, Roy F., *Adjunct Assistant Professor of Film Media*, 2007. M.A., 2003, University of Rhode Island.

Berner, Paul J., *Adjunct Professor of Chemistry*, 1987. Ph.D., 1964, Stevens Institute of Technology.

★Bicki, Thomas J., *Adjunct Assistant Professor of Plant Sciences*, 1998. Ph.D., 1981, Iowa State University.

Bielecki, Cynthia A., *Adjunct Instructor of Nursing*, 1991. M.S., 1977, Boston University.

Binkley, Marian, *Adjunct Assistant Professor of Sociology and Anthropology*, 1985. Ph.D., 1981, University of Toronto.

Binns, Linda, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1980. M.S., 1979, Northeastern University.

Bird, Thomas Gary, *Adjunct Associate Professor of Pharmacy Practice*, 2004. Ph.D., 1982, Mississippi State University.

Birmingham, Bruce K., *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 2002. Ph.D., 1980, University of Rhode Island.

Block, Pamela, *Adjunct Assistant Professor of Anthropology*, 2002. Ph.D., 1997, Duke University.

Blott, Alan J., *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science*, 1986. B.S., 1968, University of Illinois.

Blumen, Dale, *Adjunct Instructor of Human Development and Family Studies*, 1999. M.S., 1985, University of Rhode Island.

★Bodammer, Joel E., *Adjunct Associate Professor of Fisheries, Animal and Veterinary Science*, 1990. Ph.D., 1974, University of Wisconsin.

★Boekelheide, Kim, *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 1992. M.D., Ph.D., 1980, Duke University.

Boni, Cathy E., *Adjunct Assistant Professor of Nursing*, 2000. Ph.D., 2001, University of Massachusetts.

Borgerson, Janet, *Adjunct Associate Professor of Philosophy*, 2000. Ph.D., 1996, University of Wisconsin, Madison.

Boudreau, Marybeth, *Adjunct Assistant Professor of Pharmacy Practice*, 2004. Pharm.D., 1999, Massachusetts College of Pharmacy.

★Bourbonnais, Richard J., II, *Adjunct Assistant Professor of Plant Sciences*, 1998. M.L.A., 1994, Virginia Polytechnic Institute and State University.

Bowen, Craig, *Adjunct Assistant Professor of Pharmacy Practice*, 1997. Pharm.D., 1987, University of Rhode Island.

Bowman, Tracey A., *Adjunct Instructor of Nursing*, 1996. M.S.N., 1986, University of Pennsylvania.

Boyes, Susan C., *Adjunct Instructor of Nursing*, 2003. M.A., 1996, Southwestern College.

Bozkurt, Bedri, *Adjunct Assistant Professor of Chemical Engineering*, 1999. Ph.D., 1980, Ege University, Izmir, Turkey.

★Bozyan, Elizabeth Pike, *Adjunct Associate Professor of Physics*, 1993. Ph.D., 1985, University of Texas, Austin.

Bozzi, Joann D., *Adjunct Instructor of Nursing*, 2005. M.S., 1992, University of Rhode Island.

Braden, Judith W., *Adjunct Instructor of Nursing*, 2004. M.S.N., 1968, University of California, San Francisco.

Breece, Connie, *Adjunct Instructor of Nursing*, 2000. M.S.N., 1986, Yale University.

★Brehany, James J., *Adjunct Assistant Professor of Pharmacy Practice*, 2003. J.D., 1986, Western State University.

Brennan, Noel-Anne G., *Adjunct Assistant Professor of Sociology and Anthropology and Women's Studies*, 1988. M.A., 1982, University of Rhode Island.

Brenneman, Betsey J., *Adjunct Assistant Professor of Library and Information Studies*, 1978. M.A.T., 1978, Fitchburg State College.

★Breur, Miklos, *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 1992. Ph.D., 1958, Weizmann Institute of Science, Rehovot, Israel.

★Briere, Michael, *Adjunct Assistant Professor of Physics*, 1995. Ph.D., 1993, Technical University of Berlin.

Brown, David William, *Adjunct Professor of Environmental and Natural Resource Economics, 1995*. Ph.D., 1956, Iowa State University.

★Brown, Jody, *Adjunct Assistant Professor of Psychology, 1997*. Ph.D., 1990, City University of New York.

Brown, Lynne J., *Adjunct Instructor of English, 1991*. M.A., 1978, Rhode Island College.

Brown-Small, Vania, *Adjunct Instructor of Nursing, 2004*. M.S., 1997, University of Rhode Island.

Browning, Lynne C., *Adjunct Assistant Professor of Nursing, 2001*. M.S., 1996, Case Western Reserve University.

★Brumbaugh, Robert David, *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science, 2005*. Ph.D., 1996, Old Dominion University.

Brunell, Mary, *Adjunct Associate Professor of Nursing, 2004, 2003*. Ed.D., 2001, Teachers College, Columbia University.

★Bryant, Elizabeth Burke, *Adjunct Assistant Professor of Community Planning, 1992*. J.D., 1985, George Washington University.

†Buckley, Lawrence J., *Adjunct Professor of Oceanography, 1991*. Ph.D., University of New Hampshire.

Buckley, Louise, *Adjunct Instructor of Library and Information Studies, 2004*. M.L.S., 1992, Rutgers University.

Bundy, William F., *Adjunct Assistant Professor of Civil and Environmental Engineering, 1996*. M.A., 1993, United States Naval War College.

Burchard, Barbara E., *Adjunct Instructor of Nursing, 2000*. M.S., 1987, University of Rhode Island.

Burke, Rebecca L., *Adjunct Assistant Professor of Nursing, 2002*. M.S., 1988, Boston University.

Burkhardt, Joanna M., *Adjunct Associate Professor of Library and Information Studies, 2004*. M.L.S., 1986, University of Rhode Island.

★Burks, Rachel J., *Adjunct Associate Professor of Geosciences, 1997*. Ph.D., 1985, University of Texas, Austin.

Burlingame, Pamela A., *Adjunct Instructor of Nursing, 1999*. M.S., 1999, University of Rhode Island.

Burrill, James D., *Adjunct Assistant Professor of Nursing, 1995*. M.D., 1984, Ross University School of Medicine.

Burton, Nancy, *Adjunct Assistant Professor of Nursing, 2000*. M.S., 1976, Columbia University.

★Byrne, Deirdre A., *Adjunct Professor of Oceanography, 2006*. Ph.D., 2000, Columbia University.

Cabral, Robert M., *Adjunct Associate Professor of Gerontology, 1982*. Ph.D., 1971, University of Massachusetts, Amherst.

★Cady-Webster, Kathleen, *Adjunct Assistant Professor of Psychology, 2003*. Ph.D., 2001, University of Rhode Island.

Caldarone, Ronald L., *Adjunct Assistant Professor of Nursing, 1985*. M.S.W., 1977, Boston University.

Caldwell, Elliott, *Adjunct Instructor of Library and Information Studies, 2004*. M.A., 1991, University of Rhode Island.

Calvert, Patricia, *Adjunct Instructor of Nursing, 2002*. M.S.N., 1996, Duquesne University.

Camara, Paul, *Adjunct Assistant Professor of Clinical Laboratory Science, 1997*. M.S., 1995, University of Rhode Island.

★Campbell, Daniel E., *Adjunct Professor of Oceanography, 1999*. Ph.D., 1984, University of Florida.

★Campbell, James F., *Adjunct Assistant Professor of Human Development and Family Studies, 1992*. Ph.D., 1987, Syracuse University.

Campbell, Judith, *Adjunct Clinical Assistant Professor of Clinical Laboratory Science, 1983*. M.S., 1986, Southeastern Massachusetts University.

★Campos, Edmo J., *Adjunct Professor of Oceanography, 2000*. Ph.D., 1990, University of Brasilia, Brazil.

★Canick, Jacob A., *Adjunct Associate Professor of Clinical Laboratory Science, 1988*. Ph.D., 1972, University of Rhode Island.

Cano, Steven, *Adjunct Professor of Pharmacy Practice, 2006*. M.S., 1985, University of Kansas.

Capuano, Sharon Q., *Adjunct Instructor of Nursing, 1992*. M.S., 1988, University of Rhode Island.

Carl, Robert L., Jr., *Adjunct Professor of Human Science and Services, 1997*. Ph.D., 1971, University of Michigan.

★Carlton, James T., *Adjunct Professor of Biological Sciences, 2002*. Ph.D., 1979 University of California, Davis.

Carnevale, Robert A., *Adjunct Assistant Professor of Nursing, 1998*. M.D., 1975, New York Medical College.

Carr, Marylou, *Adjunct Instructor of Nursing, 2000*. M.S., 1991, Emory University.

Carr, Stephen R., *Adjunct Professor of Nursing, 2007*. M.D., 1982, University of Hawaii, John A., Burns School of Medicine.

★Caruso, David A., *Adjunct Professor of Human Development and Family Studies, 2000*. Ph.D., 1985, Cornell University.

Cashore, William J., *Adjunct Professor of Nursing, 1997*. M.D., 1966, University of Pennsylvania.

Castro, Kathleen M., *Adjunct Associate Professor of Fisheries, Animal and Veterinary Science, 2004*. Ph.D., 2003, University of Rhode Island.

Castro, Nancy, *Adjunct Instructor of Nursing, 2007*. M.S., 1998, University of Rhode Island.

Catalano, Carmen J., *Adjunct Assistant Professor of Pharmacy Practice, 1990*. M.Ed., 1978, Providence College.

Cataldo, Diane, *Adjunct Clinical Instructor of Clinical Laboratory Science, 1980*. B.S., 1976, Barrington College.

Celebuki, Carol, *Adjunct Professor of Psychology, 2006, 2001*. Ph.D., 1994, University of Rhode Island.

Celver, Jeremy, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences, 2007*. Ph.D., 2002, University of Washington, Seattle.

Cerbo, Louis A., *Adjunct Assistant Professor of Psychology, 1998*. Ed.D., 1990, Boston University.

★Cerrato, Robert M., *Adjunct Associate Professor of Natural Resources Science, 2003*. Ph.D., 1980, Yale University.

Chabot, Russell, *Adjunct Assistant Professor of Sociology, 2000*. Ph.D., 1992, State University of New York, Buffalo.

Cheek, Dennis W., *Adjunct Associate Professor of Education, 1997*. Ph.D., 1989, Pennsylvania State University.

Cheng, Yung-Sung, *Adjunct Assistant Professor of Mechanical Engineering and Applied Mechanics, 1999*. Ph.D., 1976, Syracuse University.

Chiaramida, Salvatore, *Adjunct Professor of Electrical and Computer Engineering (Biomedical Engineering), 1998*. M.D., 1974, New York Medical College.

★Chomet, Paul S., *Adjunct Professor of Biological Sciences, 1993, and Biochemistry, Microbiology, and Molecular Genetics, 1997*. Ph.D., 1988, State University of New York, Stony Brook.

Churchill, Martha E., *Adjunct Assistant Professor of Nursing, 2001, 1996*. M.S.N., 1980, University of Pennsylvania.

Cioe, Patricia A., *Adjunct Instructor of Nursing, 2000*. M.S., 1995, University of Rhode Island.

Cirillo, L. Anthony, *Adjunct Assistant Professor of Nursing, 2003*. M.D., University of Vermont, College of Medicine.

Clapham, Andrew J., *Adjunct Assistant Professor of Chemistry, 2001*. M.S., 1966, University of Rhode Island.

Clay, Patricia Mary, *Adjunct Assistant Professor of Anthropology, 1994*. Ph.D., 1992, Indiana University.

Clement, Fiona B., *Adjunct Instructor of Nursing, 2000*. M.P.H., 1999, Boston University School of Public Health.

Closson-Ross, Sylvia P., *Adjunct Instructor of Nursing, 1994*. M.S., 1991, University of Pennsylvania.

★Cochran, James K., *Adjunct Professor of Oceanography, 2004*. Ph.D., 1979, Yale University.

Coffey, William J., *Adjunct Associate Professor of Marine Affairs, 2000*. J.D., 1969, Georgetown University Law Center.

★Cohen, Ronald A., *Adjunct Professor of Astronomy, 1996*. Ph.D., 1982, Louisiana State University.

★Cohenford, Menashi A., *Adjunct Professor of Chemistry, 2004*. Ph.D., 1982, University of Rhode Island.

★Colby, John J., *Adjunct Professor of Psychology, 1986*. Ph.D., 1974, University of Rhode Island.

Collins, Elinor, *Adjunct Instructor of Nursing, 1992*. M.S., 1987, Boston University.

Colwill, Ruth Melanie, *Adjunct Associate Professor of Fisheries, Animal and Veterinary Science, 2005*. Ph.D., 1982, University of Cambridge, England.

Compton, Jana E., *Adjunct Assistant Professor of Natural Resources Science, 1996*. Ph.D., 1994, University of Washington.

Connerney, Patricia A., *Adjunct Instructor of Nursing, 1996*. M.S., 1992, University of Rhode Island.

Connolly, Walter C., *Adjunct Assistant Professor of Physics, 1985*. Ph.D., 1954, Catholic University of America.

Constantine, Herbert P., *Adjunct Professor of Nursing, 1978*. M.D., 1953, University of Buffalo.

Cook, Margaret Wilson, *Adjunct Instructor of Nursing, 1999*. M.S., 1998, University of Rhode Island.

Cooley, James W., *Adjunct Professor of Electrical Engineering, 1996*. Ph.D., 1961, Columbia University.

Corriveau, Pierre, *Adjunct Professor of Mechanical Engineering and Applied Mechanics, 1999 and Ocean Engineering, 2007*. Ph.D., 1991, University of Rhode Island.

Corsetti, Maria, *Adjunct Instructor of Nursing, 1995*. M.S., 1991, University of Rhode Island.

Coupchiak, Christine, *Adjunct Instructor of Nursing, 2000*. M.S., 1986, University of Portland.

Couto, Aaron J., *Adjunct Instructor of Library and Information Studies, 2005*. M.L.I.S., 2000, University of Rhode Island.

Creely, Mary Jane, *Adjunct Instructor of Nursing, 1998*. M.S., 1998, University of Rhode Island.

★Crisman, Everett E., *Adjunct Professor of Chemical Engineering, 2006, 2002, 1989*. Ph.D., 1984, Brown University.

★Cromarty, Stuart I., *Adjunct Associate Professor of Biological Sciences, 2004, 2002*. Ph.D., 1995, University of Rhode Island.

Crossley, Susan, *Adjunct Assistant Professor of Nursing, 2001*. M.S.N., 1986, University of Pennsylvania.

Crowell, Sheryl, *Adjunct Clinical Instructor of Clinical Laboratory Science, 1987*. B.S., 1979, University of Rhode Island.

Crowley, Kathleen, *Adjunct Instructor of Nursing, 2003*. M.S., 1989, University of Rhode Island.

Dabek, Carol A., *Adjunct Assistant Professor of Nursing, 1986*. M.S., 1976, University of Rhode Island.

★Dabek, Lisa, *Adjunct Assistant Professor of Natural Resources Science, 1999*. Ph.D., 1994, University of Washington.

Damon, Linda, *Adjunct Assistant Professor of Nursing, 2006, 2003*. M.S., 1983, Boston College; M.H.A., 1992, Framingham State College.

Danish, Michele A., *Clinical Associate Professor of Biomedical and Pharmaceutical Sciences, 2002*. Pharm.D., 1974, State University of New York.

Dannenfelser, Richard, *Adjunct Assistant Professor of Nursing, 1997*. Ph.D., 1963, Yale University.

Danner, Sarah Coulter, *Adjunct Assistant Professor of Nursing, 2000*. M.S.N., 1986, Case Western Reserve University.

D'Asaro, Eric A., *Adjunct Professor of Oceanography, 2006*. Ph.D., 1980, Massachusetts Institute of Technology.

Davies, William, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences, 2006*. Ph.D., 1971, University of Rhode Island.

★Davis, Alan J., *Adjunct Assistant Professor of Electrical and Computer Engineering, 2001*. Ph.D., 2000, University of Rhode Island.

Davis, Richard J., *Adjunct Professor of Biomedical and Pharmaceutical Sciences, 2001*. B.S., 1961, Arkansas State University.

Davis, Wayne R., *Adjunct Associate Professor of Marine Affairs, 1990*. Ph.D., 1978, University of South Carolina.

★Deacutis, Christopher, *Adjunct Assistant Professor of Biological Sciences, 2002*. Ph.D., 1982, University of Rhode Island.

Deery, Brian E. Wolf, *Adjunct Assistant Professor of Nursing, 1985*. Ph.D., 1982, Boston College.

Dedhiya, Mahendra, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences, 2002*. M.B.A., 1982, University of Bridgeport.

DeFede, Susanne G., *Adjunct Instructor of Nursing, 2002*. M.S., 2001, University of Rhode Island.

DeJoy, Susan A., *Adjunct Assistant Professor of Nursing, 1998*. M.S.N., 1982, University of Pennsylvania School of Nursing.

★DellaPorta, Stephen, *Adjunct Assistant Professor of Plant Sciences, 1985*. Ph.D., 1983, Worcester Polytechnic Institute.

Dellefrate, Louise M., *Adjunct Assistant Professor of Nursing, 2002, 1993*. M.S., 1989, University of Rhode Island.

★Deller, Thomas E., *Adjunct Associate Professor of Community Planning and Urban Affairs, 1995*. M.C.P., 1979, University of Rhode Island.

DelMonico, Michael J., *Adjunct Assistant Professor of Nursing, 1993*. M.B.A., 1988, University of Rhode Island.

DelSanto-Ravenscroft, Anne F., *Adjunct Assistant Professor of Nursing, 1999, 1996*. M.S.N., 1990, Yale University.

Deltano, Kim, *Adjunct Assistant Professor of Nursing, 2001*. M.S.N., 1988, University of Pennsylvania.

DeLuca, Sharon L., *Adjunct Instructor of Nursing, 1998*. M.S.N., 1995, University of Rhode Island.

Demick, Jonathan (Jack), *Adjunct Assistant Professor of Psychology, 1982*. Ph.D., 1980, Clark University.

Derreza, Anita J., *Adjunct Clinical Assistant Professor of Pharmacy Practice, 2003*. Pharm.D., 1999, University of Rhode Island.

★DeSchepper, Gerald, *Adjunct Professor of Art and Film Media, 2006, 1999*. Ph.D., 1974, Ohio University.

DeSimone, Russell, *Adjunct Assistant Professor, University Library, 2003*. B.A., 1967, Providence College.

★Dewar, William K., *Adjunct Professor of Oceanography, 2006*. Ph.D., 1983, Massachusetts Institute of Technology.

Dewey, James, *Adjunct Assistant Professor of Health and Physical Education, 1986*. Ph.D., 1984, Purdue University.

Dexter, Clarisse S., *Adjunct Instructor of Nursing, 2007*. M.S., 1990, University of Rhode Island.

Diaz, Elizabeth R., *Adjunct Assistant Professor of Nursing, 2001*. M.S.N., 1993, Yale University.

DiBiase, Paul J., Jr., *Adjunct Clinical Instructor of Pharmacy Practice, 1998*. B.S., 1993, University of Rhode Island.

DiCianzo, Karen S., *Adjunct Instructor of Nursing, 1986*. M.S., 1983, University of Rhode Island.

Dick, Karen L., *Adjunct Assistant Professor of Nursing, 2001*. Ph.D., 1998, University of Rhode Island.

Dickerman, Daniel, *Adjunct Assistant Professor of Computer Science and Statistics, 2007*. B.S., 1992, University of Rhode Island.

Dickson, Mary-Lynn, *Adjunct Professor of Oceanography, 1999*. Ph.D., 1994, Oregon State University.

DiNapoli, Frederick R., *Adjunct Associate Professor of Mathematics, 1979*. Ph.D., 1969, University of Rhode Island.

Dluhy, Nancy M., *Adjunct Associate Professor of Nursing, 1996*. Ph.D., 1993, University of Rhode Island.

Dolce, Maria, *Adjunct Instructor of Nursing, 2006*. M.A., 1985, New York University.

†★Donaghay, Percy L., *Adjunct Professor of Oceanography, 2000*. Ph.D., 1979, Oregon State University.

Donilon, Donna, *Adjunct Instructor of Nursing, 2004*. M.S., 1988, Boston College.

Donohue, Kathleen, *Adjunct Professor of Oceanography, 2005*. Ph.D., 1996, University of Rhode Island.

Dorato, Denise A., *Adjunct Instructor of Nursing, 2005*. M.S., 2000, University of Rhode Island.

Drury, Jeffrey J., *Adjunct Instructor of Nursing, 2003*. M.S., 2000, University of Connecticut.

Dudley, Michael, *Adjunct Professor of Biomedical and Pharmaceutical Sciences, 1997*. Pharm.D., 1980, University of California School of Pharmacy.

★Dudzinski, Kathleen M., *Adjunct Associate Professor of Fisheries, Animal and Veterinary Science, 2004*. Ph.D., 1996, Texas A&M University.

Dufault, Donna, *Adjunct Instructor of Library and Information Studies, 2004*. M.L.S., 1973, University of Rhode Island.

Dunbar, Jennifer, *Adjunct Instructor of Nursing, 2007*. M.S., 2004, University of Rhode Island.

Duquette, Cathy, *Adjunct Associate Professor of Nursing, 2000*. Ph.D., 2001, University of Massachusetts.

Durand, Linda, *Adjunct Assistant Professor of Nursing, 1993*. M.S., 1982, University of Rhode Island.

★Durfee, David A., *Adjunct Assistant Professor of Computer Science, 1999*. Ph.D., 1992, Brown University.

Durham, Juanita S., *Adjunct Instructor of Nursing, 2000*. M.S., 1999, University of Rhode Island.

Dwyer, Mary F., *Adjunct Instructor of Nursing, 2001*. M.S., 1997, University of Rhode Island.

Ead, Neil F., *Adjunct Assistant Professor of Nursing, 1999*. M.S.N., 1990, Yale University School of Nursing.

Edwards, Steven F., *Adjunct Assistant Professor of Environmental and Natural Resource Economics, 1993*. Ph.D., 1984, University of Rhode Island.

Eklund, Claire, *Adjunct Assistant Professor of Clinical Laboratory Science, 1997*. M.S., 1988, Lesley College.

Ellis, Christopher P., *Adjunct Associate Professor of Nutrition and Food Sciences, 2007*. Ph.D., 1996, University of Rhode Island.

Emard, Esther, *Adjunct Assistant Professor of Nursing, 2006*. 1994. M.S., 1982, 1988, University of Rhode Island.

Emery, Michelle M., *Adjunct Instructor of Pharmacy Practice, 1994*. Pharm.D., 2000, University of Rhode Island.

★Encarnação, L. Miguel, *Adjunct Assistant Professor of Computer Science, 1999*. Ph.D., 1997, University of Tübingen.

Englander, Carol, *Adjunct Instructor of Human Development and Family Studies*, 2001. M.S., 1970, Oregon State University.

Enright, Karen, *Adjunct Associate Professor of Nursing*, 1997. Ph.D., 1990, University of Connecticut.

★Erickson, Bette LaSere, *Adjunct Assistant Professor of Psychology*, 1981. Ed.D., 1976, University of Massachusetts.

Erickson-Owens, Debra, *Adjunct Assistant Professor of Nursing*, 2005. M.S., 1988, University of Utah.

Esparza, Alfredo, *Adjunct Professor of Clinical Laboratory Science*, 1997. M.D., 1957, University of Puebla.

Ette, Ene, *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 1997. Ph.D., 1990, Glasgow University.

Evans, Barbara, *Adjunct Instructor of Nursing*, 2002. M.S., 1990, University of Michigan.

Evans, N. Adria, *Adjunct Assistant Professor of Women's Studies*, 1990. M.A., 1985, University of Rhode Island.

★Evers, Kerry, *Adjunct Assistant Professor of Psychology*, 1998. Ph.D., 1998, University of Rhode Island.

Ewan, Jean, *Adjunct Assistant Professor of Nursing*, 2001. M.P.H., 1989, Boston University School of Public Health.

Farrell, John, *Associate Dean of the Graduate School of Oceanography and Adjunct Professor of Oceanography*, 2004. Ph.D., 1991, Brown University.

★Fava, Joseph, *Adjunct Associate Professor of Psychology*, 1989. Ph.D., 1990, University of Rhode Island.

Feder, Susan, *Adjunct Clinical Instructor of Physical Education*, 1995. M.S., 1989, University of Rhode Island.

Feeley, Barbara A., *Adjunct Instructor of Nursing*, 1995. M.S., 1992, University of Rhode Island.

Feeney, David P., *Adjunct Clinical Associate Professor of Pharmacy Practice*, 2003, 1998. M.S., 1998, University of Rhode Island.

Feole, Betsy, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1990. B.S., 1982, Rhode Island College.

Ferdinandi, Melissa Taylor, *Adjunct Instructor of Nursing*, 2001. J.D. 1984, Seattle University School of Law. M.S., 1995, Vanderbilt University.

Ferguson, Cynthia T., *Adjunct Instructor of Nursing*, 2000. M.S.N., 1998, Case Western Reserve University.

Ferland, Robert, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1995. B.A., 1966, Rhode Island College.

Ferrante, Richard J., *Adjunct Assistant Professor of Psychology*, 1997. Ph.D., 1985, University of Rhode Island.

★Filardo, Edward, *Adjunct Assistant Professor of Biological Sciences*, 2002. Ph.D., 1989, University of Texas Health Science Center.

★Fischer, Karen M., *Adjunct Associate Professor of Geosciences*, 1996. Ph.D., 1988, Massachusetts Institute of Technology.

★Fisher, Douglas O., *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 1986. Ph.D., 1979, University of Rhode Island.

Flanagan, Patricia J., *Adjunct Associate Professor of Nursing*, 1997. M.D., 1983, State University of New York, Buffalo.

★Fleming, Michael W., *Adjunct Associate Professor of Fisheries, Animal and Veterinary Science*, 1993. Ph.D., 1980, Ohio State University.

★Fletcher, Kristen M., *Adjunct Assistant Professor of Marine Affairs*, 2004. L.L.M., 1998, Northwestern School of Law.

★Flynn, Kevin, *Adjunct Assistant Professor of Community Planning and Area Development*, 1992. M.C.P., 1980, University of Rhode Island.

★Fraley, James A., *Adjunct Instructor of Nursing*, 2005. M.S., 1979, Pennsylvania State University.

Francis, M. Lynne, *Adjunct Assistant Professor of Nursing*, 2005. M.S., 1974, Boston University.

Frazier, Robert S., *Adjunct Assistant Professor of Psychology*, 2002. Ph.D., 1975, University of Rhode Island.

★Frenzel, E. Grace, *Adjunct Assistant Professor of Psychology*, 1980. Ph.D., 1979, Colorado State University.

Fried, David L., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. M.D., 1989, Emory University.

Friedman, Joseph, *Adjunct Clinical Professor of Pharmacy Practice*, 1995. M.D., 1978, Columbia University College of Physicians.

Friedman, Laurie Ann, *Adjunct Assistant Professor of Nursing*, 2000. M.S.N., 1985, Yale University.

Friend, Karen, *Adjunct Assistant Professor of Psychology*, 2005. Ph.D., 1997, University of Maryland.

Fulton, Anna Faucher, *Adjunct Assistant Professor of Nursing*, 1993. M.S., 1984, University of Rhode Island.

Gagnon, Rosemarie O., *Adjunct Instructor of Nursing*, 1997. M.S., 1995, Northeastern University.

★Gallagher, Patricia, *Adjunct Associate Professor of Psychology*, 2006, 2002. Ph.D., 1992, University of Rhode Island.

Gamble, Valerie, *Adjunct Assistant Professor of Clinical Laboratory Science*, 2003. M.Ed., 2000, Curry College.

★Gann, Kathryn, *Adjunct Assistant Professor of Pharmacy Practice*, 1993. Ph.D., 1977, Wesleyan University.

Ganz, Arthur R., *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science*, 1986. M.S., 1973, University of Rhode Island.

★Garber, Carol Ewing, *Adjunct Associate Professor of Kinesiology*, 1998. Ph.D., 1990, University of Connecticut.

Garman, Dorothy Anne, *Adjunct Instructor of Nursing*, 2005. M.S.N., 1978, Boston College.

★Garrido, Maria, *Adjunct Associate Professor of Clinical Psychology*, 1995. Psy.D., 1988, Rutgers-The State University of New Jersey.

★Gastonguay, Marc, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 1993. Ph.D., 1993, Georgetown University.

Gauthier, Chris R., *Adjunct Clinical Instructor of Pharmacy Practice*, 2003. B.S., 1994, University of Rhode Island.

★Gemma, Jane N., *Adjunct Associate Professor of Plant Sciences and of Biological Sciences*, 2001, 1992. Ph.D., 1987, University of Rhode Island.

Gentile, John H., *Adjunct Associate Professor of Fisheries, Animal and Veterinary Science*, 1982. Ph.D., 1966, University of New Hampshire.

George, Bernard, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1980. M.S., 1976, Southeastern Massachusetts University.

George, Hoell R., *Adjunct Clinical Instructor of Pharmacy Practice*, 1998. Pharm.D., 1996, Massachusetts College of Pharmacy.

Gerraughty, Robert J., *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 2003. Ph.D., 1958, University of Connecticut.

★Gettman, Alan D., *Adjunct Assistant Professor of Entomology*, 1992. Ph.D., 1989, University of Florida, Gainesville.

Ghang, Jonghee, *Adjunct Professor of Environmental and Natural Resource Economics*, 2003. Ph.D., University of Liverpool, 1990.

Ghazal, Maria, *Adjunct Instructor of Nursing*, 1997. M.S., 1982, Boston University.

Gianquitti, Kathleen B., *Adjunct Assistant Professor of Food Science and Nutrition*, 1986. M.S., 1981, University of Rhode Island.

★Giblin, Anne E., *Adjunct Professor of Oceanography*, 2005. Ph.D., 1982, Boston University.

Gibson, Pamela R., *Adjunct Assistant Professor of Women's Studies*, 1992. Ph.D., 1991, University of Rhode Island.

†Ginsberg, Howard S., *Adjunct Associate Professor of Plant Sciences*, 1990. Ph.D., 1979, Cornell University.

★Gleason, Timothy Ross, *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science*, 2001. Ph.D., 1995, University of Rhode Island.

Gmuer, Cecilia, *Adjunct Assistant Clinical Professor of Clinical Laboratory Science*, 1983. M.D., 1977, Albany Medical College.

Gobburu, Jigarao, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 2006. Ph.D., 1996, North Dakota State University.

Goetz, Cynthia A., *Adjunct Assistant Professor of Nursing*, 2000. M.S., 1986, Yale University.

Goldman, Ralph F., *Adjunct Professor of Textiles, Fashion Merchandising, and Design*, 1982. Ph.D., 1954, Boston University.

Goldstein, Elaina K., *Adjunct Professor of Labor Relations and Human Resources*, 2001. J.D., 1989, Temple University, School of Law.

★Gomez, Jason, *Adjunct Assistant Professor of Mechanical Engineering*, 2002. Ph.D., 2001, University of Rhode Island.

★Gonzales, Elena V., *Adjunct Assistant Professor of Psychology*, 1991. Ph.D., 1979, University of Washington.

Gordon, Susan H., *Adjunct Assistant Instructor of Plant Sciences*, 1996. Ph.D., 1995, University of Rhode Island.

★Gorres, Josef H., *Adjunct Associate Professor of Natural Resources Science*, 1999, 1993. Ph.D., 1983, University of Manchester.

Grabauskas, Patricia A., *Adjunct Assistant Professor of Nursing*, 2001. 1996. M.S.N., 1988, Georgetown University.

Graham, Cleo, *Adjunct Instructor of Nursing*, 2000. M.S., 1980, Columbia University.

Graves, Amy, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1989. M.S., 1985, Southeastern Massachusetts University.

Graves, Barbara Wingate, *Adjunct Assistant Professor of Nursing*, 1998. M.S.N., 1986, Emory University.

Graziano, Catherine E., *Adjunct Associate Professor of Nursing*, 1993. Ph.D., 1988, Pacific Western University.

★Greaney, Mary L., *Adjunct Assistant Professor of Psychology*, 2003. Ph.D., 2002, University of South Carolina.

★Greenburg, Reva, *Adjunct Assistant Professor of History*, 2005. Ph.D., 1983, University of California, San Diego.

Greenspan, Ruth L., *Adjunct Assistant Professor of Anthropology*, 1988. Ph.D., 1985, University of Oregon.

Griffin, Martha, *Adjunct Associate Professor of Nursing*, 2004. Ph.D., 1999, University of Rhode Island.

Groden, Gerald, *Adjunct Professor of Psychology*, 1995. Ph.D., 1963, Purdue University.

Groden, June, *Adjunct Professor of Psychology*, 1995. Ph.D., 1982, Boston College.

★Groffman, Peter M., *Adjunct Associate Professor of Natural Resources Science*, 1993. Ph.D., 1984, University of Georgia.

Grossomanides, John, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 2000, University of Rhode Island.

Guenette, Simone, *Adjunct Instructor of Nursing*, 1992. M.S.N., 1972, University of Massachusetts.

★Guilmette, Thomas J., *Adjunct Professor of Astronomy*, 1997. Ph.D., 1982, University of Missouri.

Hackett, Linda Atherton, *Adjunct Instructor of Nursing*, 1996. M.S., 1978, University of North Florida.

Hahn, Margaret E., *Adjunct Instructor of Nursing*, 2006. M.S., 1999, University of Rhode Island.

Hale, Lynne Z., *Adjunct Assistant Professor of Marine Affairs*, 1992. M.S., 1975, University of Rhode Island.

Haley, Nancy R., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2007. M.S., 1991, University of Rhode Island.

Hall, Diane Pallante, *Adjunct Instructor of Nursing*, 1994. M.S., 1992, University of Rhode Island.

★Hall, John K., *Adjunct Professor of Ocean Engineering*, 1997. Ph.D., 1970, Columbia University.

★Hall, Kara, *Adjunct Assistant Professor of Psychology*, 2005. Ph.D., 2004, University of Rhode Island.

★Hamilton, Cynthia M., *Adjunct Professor of Community Planning and Urban Affairs*, 1995. Ph.D., 1980, Boston University.

★Hammen-Winn, Susan L., *Adjunct Associate Professor of Biological Sciences*, 1992. Ph.D., 1989, University of Rhode Island.

Hancock, Boze, *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science*, 2004. Ph.D., 2004, University of Western Australia.

Hannon Christine, *Adjunct Instructor of Library and Information Studies*, 2004. M.B.A., 1982, University of Denver.

★Hanson, Alfred K., Jr., *Adjunct Professor of Oceanography*, 1993. Ph.D., 1981, University of Rhode Island.

Hapke, Cheryl, *Adjunct Assistant Professor of Geosciences*, 2005. Ph.D., 2002, University of California, Santa Cruz.

Harbar, Olga, *Adjunct Instructor of Nursing*, 1997. M.S., 1983, Simmons College.

★Hare, Jonathan A., *Adjunct Associate Professor of Fisheries, Animal and Veterinary Science*, 2005. Ph.D., 1994, State University of New York, Stony Brook

★Harr, Milton E., *Adjunct Professor of Civil and Environmental Engineering*, 1995. Ph.D., 1958, Purdue University.

Harrison, M. Jane, *Adjunct Instructor of Nursing*, 1995. M.S., 1973, Boston College School of Nursing.

Harritos, Nancy L., *Adjunct Instructor of Nursing*, 1993. M.S., 1990, University of Rhode Island.

★Haspel, Katherine C., *Adjunct Associate Professor of Psychology*, 2003. 1985. Ph.D., 1981, University of Rhode Island.

Hassett, Lynn M., *Adjunct Instructor of Nursing*, 2001. M.P.H., 1993, Boston University School of Public Health.

Hawes, Kathleen, *Adjunct Instructor of Nursing*, 2003. M.S., 2002, University of Rhode Island.

Haytaian, Charles L., R.Ph., *Adjunct Assistant Professor of Pharmacy Practice*, 1990. B.S., 1977, Massachusetts College of Pharmacy.

Heald, Emerson F., *Adjunct Visiting Professor of Chemistry*, 1995. Ph.D., 1961, University of Hawaii.

Healey, James E., *Adjunct Professor of Communicative Disorders*, 1987. M.S., 1975, Purdue University.

Healey, Mary M., *Adjunct Assistant Professor of Communication Studies*, 1998. M.A., 1994, Emerson College.

Healey, Michael Charles, *Adjunct Professor of Political Science*, 1995. Ph.D., 1969, University of Aberdeen.

★Heelan, Judith S., *Adjunct Assistant Professor of Clinical Laboratory Science*, 1988. Ph.D., 1982, University of Rhode Island.

Helm-Estabrooks, Nancy, *Adjunct Professor of Communicative Disorders*, 2002. Sc.D., 1979, Boston University.

Hennessey, Barry J., *Adjunct Assistant Professor of Library and Information Studies*, 1985. Ph.D., 1972, Harvard University.

★Henry, Timothy, *Adjunct Assistant Professor of Computer Science and Statistics*, 2004. Ph.D., 2001, University of Rhode Island.

Hertfelt-Wahn, Inger Elisabeth, *Adjunct Instructor of Nursing*, 2002. M.S., 1999, University of Göteborg, Sweden.

Higa, Katashi, *Adjunct Visiting Professor of Economics*, 1985. M.A., 1972, MeijiGakuin University, Japan.

★Hilliard, Dennis C., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 1992, 1980. M.S., 1980, University of Rhode Island.

Himmel, Peter B., *Adjunct Associate Professor of Applied Pharmaceutical Sciences*, 1997. M.D., 1972, State University of New York, Downstate Medical Center.

Hindle, Marguerita C., *Adjunct Associate Professor of Textiles, Fashion Merchandising, and Design*, 1987. B.S., 1949, University of Rhode Island.

★Ho, Kay T., *Adjunct Professor of Oceanography*, 2000. Ph.D., 1992, University of Rhode Island.

Hobden, Diana L., *Adjunct Instructor of Nursing*, 1998. M.S., 1982, Pace University.

Hodgman, Diane, *Adjunct Assistant Professor of Nursing*, 1996. M.S., 1974, Columbia University.

Hoell, George R., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 2000, Massachusetts College of Pharmacy.

Hoey, John J., *Adjunct Professor of Fisheries, Animal and Veterinary Science*, 2004. Ph.D., 1983, University of Rhode Island.

Hoffman, H. Rainer, *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 1992. Ph.D., 1979, Phipps University, Marburg, Switzerland.

Hoffmann, Philip, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1980. B.S., 1973, University of Rhode Island.

Holdredge, Ann, *Adjunct Assistant Professor of Nursing*, 2000. M.S., 1995, University of Rhode Island.

Holland, Daniel, *Adjunct Professor of Environmental and Natural Resource Economics*, 2003. Ph.D., 1998, University of Rhode Island.

Holler, Karen A., *Adjunct Assistant Professor of Psychology*, 2002. Ph.D., 1996, University of Florida.

★Hollister, Jeffrey W., *Adjunct Assistant Professor of Natural Resources Science*, 2006. Ph.D., 2004, University of Rhode Island.

★Holm, Alison L., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 1982. J.D., 1982, Suffolk University Law School; M.P.H., 1985, Harvard University School of Public Health.

Howard, Elisabeth D., *Adjunct Instructor of Nursing*, 2005. M.S., 1991, Yale University.

★Hubbell, Richard F., *Adjunct Assistant Professor of Mechanical Engineering and Applied Mechanics*, 1990. Ph.D., 1989, University of Rhode Island.

★Hudson, William E., *Adjunct Professor of Political Science*, 1991. Ph.D., 1976, Brown University.

Hunter, Linda A., *Adjunct Instructor of Nursing*, 1998. M.S.N., 1995, University of Rhode Island.

Huntley-Newby, Donna, *Adjunct Associate Professor of Nursing*, 2004. Ph.D., 1993, Boston College.

★Hurley, Daniel J., Jr., *Adjunct Associate Professor of Psychology*, 2004, 1981. Ph.D., 1976, University of Maryland.

★Hurley, Marianne, *Adjunct Instructor of Nursing*, 2001. M.S., 1991, University of Rhode Island.

★Hutchinson, Martha, *Adjunct Professor of Clinical Laboratory Science*, 1997. Ph.D., M.D., 1974, Case Western Reserve University.

★Hyde, Mark S., *Adjunct Professor of Political Science*, 1991. Ph.D., 1972, Michigan State University.

Imig, David Gregg, *Adjunct Associate Professor, Institute of Human Science and Services*, 1981. Ph.D., 1969, University of Illinois.

Immonen, Delight Lewis, *Adjunct Instructor of Nursing*, 1999. M.M.E., 1962, New England Conservatory of Music.

Ingersoll, Frances H., *Adjunct Clinical Assistant Professor of Clinical Laboratory Science*, 1986. M.S., 1981, Southeastern Massachusetts University.

★Jackson, Donald C., *Adjunct Professor of Biological Sciences*, 2000. Ph.D., 1963, University of Pennsylvania.

Jackson, Michael G., *Adjunct Assistant Professor of Library and Information Studies*, 2004. Ph.D., 1991, Brandeis University.

Jackson-Kohlin, Donna, *Adjunct Instructor of Nursing*, 1998. M.S.N., 1990, University of Pennsylvania.

Jandik, Petr, *Adjunct Assistant Professor of Chemistry*, 1991. Ph.D., 1982, Technical University, Munich, Germany.

★Jantrania, Anish R., *Adjunct Assistant Professor of Natural Resources Science*, 1995. Ph.D., 1989, Clemson University.

★Jarecki, Lianna L., *Adjunct Associate Professor of Natural Resources Science*, 2005. Ph.D., 2004, University of Kent, Canterbury, UK.

★Jaworski, Norbert J., *Adjunct Professor of Civil and Environmental Engineering*, 1995. Ph.D., 1968, University of Michigan, Ann Arbor.

★Jay, Gregory D., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2002. M.D., Ph.D., 1990, State University of New York at Stony Brook.

Jennane, Rachid, *Adjunct Associate Professor of Electrical Engineering*, 2006. Ph.D., 1995, University of Orleans, France.

★Jensen, John, *Adjunct Assistant Professor of History*, 2005. Ph.D., 2000, Carnegie Mellon University.

Johnson, Benjamin, *Adjunct Assistant Professor of Psychology*, 2003. Ph.D., 1997, Yale University.

Johnson, Douglas, *Adjunct Assistant Professor of Community Planning and Area Development*, 1980. M.C.P., 1971, University of Rhode Island.

Johnson, Elizabeth, *Adjunct Assistant Professor of Natural Resources Science*, 2000. M.S., 1979, Cornell University.

★Johnson, Janet L., *Adjunct Assistant Professor of Psychology*, 2002. Ph.D., 2001, University of Rhode Island.

★Johnson, Sara S., *Adjunct Assistant Professor of Psychology*, 1999. Ph.D., 1998, University of Rhode Island.

Jones, Gregory B., *Adjunct Professor of Industrial and Systems Engineering*, 2000. Ph.D., 1998, University of Rhode Island.

Jordan, Linda S., *Adjunct Instructor of Nursing*, 1993. M.S., 1987, University of Rhode Island.

Joshi, Yatindra, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 2002. Ph.D., 1979, Dalhousie University.

Julian, Ernest M., *Adjunct Assistant Professor of Food Science and Nutrition*, 1992. Ph.D., 1992, University of Connecticut.

Kaiser, Edward A., *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science*, 1984. Ph.D., 1992, University of Rhode Island.

Kaplan, Arthur M., *Adjunct Professor of Plant Sciences*, 1969. Ph.D., 1948, University of Massachusetts.

Kaplan, Gary B., *Adjunct Assistant Professor of Biochemistry, Microbiology, and Molecular Genetics*, 1996. M.D., 1983, Hahnemann University School of Medicine.

★Karbach, Michael, *Adjunct Associate Professor of Physics*, 2002. Ph.D., 1994, University of Wuppertal, Germany.

Kaul, Alan F., *Adjunct Professor of Pharmacy Practice*, 1998. M.B.A., 1980, Suffolk University.

Kaw, Yao Tek, *Adjunct Associate Professor of Clinical Laboratory Science*, 1997. M.D., 1983, Memorial Medical College.

Kearns, Christine L., *Adjunct Instructor of Nursing*, 1999. M.S., 1997, University of Rhode Island.

★Keating, J. Michael, *Adjunct Professor of Labor and Industrial Relations*, 1987. J.D., 1973, Georgetown University Law School.

Keefe-Canetti, Marjorie, *Adjunct Instructor of Nursing*, 1991. M.S.N., 1982, Pace University.

Keene, Corinne C., *Adjunct Instructor of Nursing*, 1989. M.S., 1982, University of Rhode Island.

Keleher, Kathleen Carrigan, *Adjunct Assistant Professor of Nursing*, 2001. M.P.H., 1979, Johns Hopkins University.

Kellerman, Frank, *Adjunct Instructor of Library and Information Studies*, 1983. M.S.L.S., 1977, Case Western Reserve University.

Kellogg, Dorothy Q., *Adjunct Assistant Professor of Natural Resources Science*, 2005. Ph.D., 2005, University of Rhode Island.

Kelly, James Raymond, *Adjunct Instructor of Library and Information Studies*, 2004. M.A., 1977, State University of Rochester.

Kemp, Kenneth A., *Adjunct Professor of Physics*, 2000. Ph.D., 1974, University of Rhode Island.

Kempner, Steven M., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. M.D., 1978, State University of New York, Downstate Medical Center.

★Kenna, George A., *Adjunct Assistant Professor of Psychology*, 2004. Ph.D., 2003, University of Rhode Island.

Kennedy, Cathy L., *Adjunct Instructor of Nursing*, 2006. M.S., 1996, University of Rhode Island.

Kennedy, Evelyn D., *Adjunct Associate Professor of Textiles, Fashion Merchandising, and Design*, 1987. M.S., 1971, University of Rhode Island.

Kennedy, Patricia, *Adjunct Instructor of Nursing*, 2000. M.S., 1982, University of Rhode Island.

★Kenney, Margaret, *Adjunct Assistant Professor of Clinical Laboratory Science*, 1988. M.S., 1983, Southeastern Massachusetts University.

†★Kenney, Robert D., *Adjunct Professor of Oceanography*, 1996. Ph.D., 1984 University of Rhode Island.

Kerbel, Claudia M., *Adjunct Instructor of Human Development and Family Studies*, 1996. M.S., 1974, Cornell University.

Kessimian, Novbar, *Adjunct Clinical Associate Professor of Clinical Laboratory Science*, 1986. M.D., 1972, University of Buenos Aires School of Medicine.

Kight, Denise, *Adjunct Instructor of Nursing*, 2001. M.S., 1996, University of Rhode Island.

Killian, Martin, *Adjunct Assistant Professor of Pharmacy Practice*, 1992. M.B.A., 1990, Bryant College.

Kilpatrick, Robert W., *Adjunct Professor of Textiles, Fashion Merchandising, and Design*, 1982. M.S., 1954, Springfield College.

Kimpton, John, *Adjunct Assistant Professor of Psychology*, 2003. Ph.D., 1997, University of Rhode Island.

Kitsos, Thomas R., *Adjunct Professor of Marine Affairs*, 1991. Ph.D., 1972, University of Illinois.

★Klein-MacPhee, Grace, *Adjunct Professor of Fisheries, Animal and Veterinary Science*, 1999. Ph.D., 1979, University of Rhode Island.

Clitz, Barbara, *Adjunct Assistant Professor of Clinical Laboratory Science*, 2003. B.S., 1976 University of Rhode Island.

★Klyberg, Albert T., *Adjunct Associate Professor of History*, 1976. Ph.D., 1967, University of Michigan.

Knowlton, Kathleen A., *Adjunct Instructor of Nursing*, 2001. M.S., 1991, University of Rhode Island.

★Kocik, John Francis, *Adjunct Professor of Fisheries, Animal and Veterinary Science*, 2000. Ph.D., 1992, Michigan State University.

★Kodavanti, Prasada S., *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 2000. Ph.D., 1981, Sri Venkateswara University, Tirupati, India.

Koehler, Melanie, *Adjunct Instructor of Nursing*, 2002. M.S., 2001, University of Rhode Island.

★Kohler, Nancy E., *Adjunct Professor of Oceanography*, 2005. Ph.D., 1987, University of Rhode Island.

★Kozol, Andrea J., *Adjunct Assistant Professor of Plant Sciences*, 2000. Ph.D., 1995, Boston University.

Krause, Susan Agard, *Adjunct Instructor of Nursing*, 1998. M.S.N., 1990, University of Pennsylvania.

Krupp, Brandon H., *Adjunct Assistant Professor of Psychology*, 1998. M.D., 1989, University of Louisville Health Sciences Center.

★Ku, Warren W., *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 2001. Ph.D., 1987, University of Michigan.

Kulman, Ira R., *Adjunct Professor of Psychology*, 1988. Ph.D., 1985, Kent University.

Kumari, Anjana, *Adjunct Visiting Assistant Professor of Chemistry*, 1994. Ph.D., 1987, Punjab Agricultural University.

Labyak, Susan Elizabeth, *Adjunct Associate Professor of Nursing*, 1997. Ph.D., 1993, University of Michigan.

★LaFazia, Leonard M., *Adjunct Assistant Professor of Clinical Laboratory Science*, 1990. M.S., 1984, Salve Regina University.

Lagasse, Linda L., *Adjunct Associate Professor of Nursing*, 2006. 2003. Ph.D., 1990, Brown University.

Landes, Stephen C., *Adjunct Instructor of Communication Studies*, 1985. B.A., 1971, University of Rhode Island.

★Lapane, Kate, *Adjunct Assistant Professor of Pharmacy Practice*, 1997. Ph.D., 1995, Brown University.

LaRoche, Edward J., *Adjunct Instructor of Nursing*, 1997. M.S., 1996, University of Rhode Island.

★Lashomb, James H., *Adjunct Professor of Natural Resources Science*, 1999. Ph.D., 1975, University of Maryland.

★Lauder, George V., *Adjunct Professor of Biological Sciences*, 2007. Ph.D., 1979, Harvard University.

Lavallee, Andrea M., *Adjunct Instructor of Nursing*, 1999. M.S., 1977, University of Rhode Island.

★Leavitt, Dale F., *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science*, 2003. Ph.D., 1987, University of Maine.

★Leazas, Francis J., *Adjunct Associate Professor of Political Science*, 1991. Ph.D., 1984, University of Connecticut.

LeClair, Emily, *Adjunct Instructor of Nursing*, 1996. M.S., 1992, Yale University.

Leibman, Michael, *Adjunct Assistant Professor of Nursing*, 1999. M.D., 1993, Albert Einstein College of Medicine.

Leinhas, Marie-Anne M., *Adjunct Instructor of Human Development and Family Studies*, 1999. M.S.W., 1981, Virginia Commonwealth University.

Lemay, Virginia A., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 2000, University of Rhode Island.

★Lester, Barry, *Adjunct Professor of Psychology*, 1998. Ph.D., 1973, Michigan State University.

Leveillee, Mary F., *Adjunct Instructor of Nursing*, 1995. M.S., 1991, University of Rhode Island.

Levi, Amy Jo, *Adjunct Assistant Professor of Nursing*, 2004. Ph.D., 2000, University of Pennsylvania.

Levitsky, Igor, *Adjunct Assistant Professor of Chemistry*, 2005. Ph.D., 1989, Institute for Low Temperature Physics and Engineering, Kharov, Ukraine.

Levy, Sandra B., *Adjunct Assistant Professor of Psychology*, 1997. Ph.D., 1984, University of Massachusetts.

Lewis, John, *Adjunct Assistant Professor of Clinical Laboratory Science*, 1997. M.S., 1996, University of Rhode Island.

Lilly, Joyce Stamp, *Adjunct Instructor of Nursing*, 2006. J.D., 1989, Boston University School of Law.

Link, Jason S., *Adjunct Professor of Oceanography*, 2005. Ph.D., 1995, Michigan Technological University.

Link, Kenneth J., *Adjunct Instructor of Nursing*, 1997. M.S.W., 1994, Boston College.

Linn, Audrey, *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1974, University of Utah.

★Lipsitt, Lewis P., *Adjunct Professor of Psychology*, 2003. Ph.D., 1957, University of Iowa.

Litherland, Kay, *Adjunct Assistant Professor of Nursing*, 1992. M.S., 1973, University of Iowa.

★Liu, Betty (Biyue), *Adjunct Associate Professor of Mathematics*, 2000. Ph.D., 1993, University of Maryland.

Logan, Philip N., *Adjunct Assistant Professor of Environmental and Natural Resource Economics*, 1993. Ph.D., 1984, University of Rhode Island.

Lomas, Michael W., *Adjunct Professor of Oceanography*, 2006. Ph.D., 1999, University of Maryland.

Lopez, Gustavo E., *Adjunct Assistant Professor of Chemistry*, 1991. Ph.D., 1991, University of Massachusetts.

Lourie, Kevin J., *Adjunct Assistant Professor of Anthropology*, 2000. Ph.D., 1990, Brown University.

Lowinger, Lori Shulkin, *Adjunct Instructor of Nursing*, 1999. M.A., 1985, New York University.

Lowry, David, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2006. M.B.A., Delta State University.

Loy, John W., *Adjunct Associate Professor of Sociology*, 2001. Ph.D., 1967, University of Wisconsin, Madison.

Lubiner, Judith, *Adjunct Assistant Professor of Psychology*, 1995. Ph.D., 1989, University of Rhode Island.

Lukatela, Katarina, *Adjunct Assistant Professor of Psychology*, 2002. Ph.D., 1989, University of Connecticut.

★Luo, Hong, *Adjunct Assistant Professor of Plant Sciences*, 2000, and *Cell and Molecular Biology*, 2004. Ph.D., 1995, Catholic University of Louvain.

★Lusardi, Paula, *Adjunct Associate Professor of Nursing*, 1998. Ph.D., 1993, University of Rhode Island.

Lyle, Heidi E., *Adjunct Assistant Professor of Nursing*, 2001. M.P.H., 1995, Boston University School of Public Health.

Lyons, Edward L., *Adjunct Instructor of Nursing*, 2003. M.S., 2002, University of Rhode Island.

Lysaght, Carmen B., *Adjunct Instructor of Nursing*, 1995. M.S.N., 1980, The Catholic University of America.

Maar, Kirsten, *Adjunct Assistant Professor of Communication Studies*, 1999. M.A., 1999, University of Rhode Island.

MacDonald, Mary C., *Adjunct Associate Professor of Library and Information Studies*, 2004. M.L.I.S., 1997, University of Rhode Island.

MacDonald, Shelley A., *Adjunct Assistant Professor of Nursing*, 1998. M.S., 1989, Lesley College.

MacKenzie, Dolores, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1989. B.S., 1976, Rhode Island College.

MacKenzie, Sandra Hope, *Adjunct Instructor of Nursing*, 2007. M.S., 2002, University of Rhode Island.

★MacKinnon, John Ross, *Adjunct Professor of Astronomy*, 1996. Ph.D., 1965, University of Toronto.

MacLean, Elizabeth A., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 1999, University of Rhode Island.

Maddock, Carol A., *Adjunct Instructor of Nursing*, 2004. M.A., 1986, Providence College.

Mahammad, Riyaz Basha, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2007. Ph.D., 1999, Sri Venkateswara University, India.

Mahoney, Charles D., *Adjunct Professor of Pharmacy Practice*, 1991. M.S., 1972, University of Rhode Island.

Malick, Waseem, *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 1992. Ph.D., 1976, University of Michigan.

★Malloy, Paul F., *Adjunct Professor of Astronomy*, 1996. Ph.D., 1981, State University of New York, Binghamton.

Mandanis, Perry Nicholas, *Adjunct Assistant Professor of Nursing*, 1997. M.D., 1986, Medical University of South Carolina.

★Manheim, Patt, *Adjunct Assistant Professor of Community Planning and Area Development*, 1988. Ph.D., 1984, Cornell University.

Mann, Laura Karin, *Adjunct Instructor of Nursing*, 2004. M.S., 1984, Pace University, Leinhard School of Nursing.

Manocchia, Michael, *Adjunct Assistant Professor of Sociology and Anthropology*, 2001. Ph.D., 2000, Northeastern University.

MarcAurele, Katharine R., *Adjunct Assistant Professor of Nursing*, 1989. M.S., 1984, Boston University.

Marchese, Christine R., *Adjunct Clinical Instructor of Pharmacy Practice*, 1998. B.S., 1985, Massachusetts College of Pharmacy.

Marchese, Teresa, *Adjunct Assistant Professor of Nursing*, 1998. Ph.D., 1994, George Mason University.

Markin, Karen M., *Adjunct Assistant Professor of Journalism*, 2003. Ph.D., 1993, University of North Carolina, Chapel Hill.

★Marshall, Robert J., Jr., *Adjunct Assistant Professor of Gerontology*, 1982. Ph.D., 1981, Brown University.

Mårtenson, Lena, *Adjunct Instructor of Nursing*, 2001. M.S., 1997, Göteborg University, Sweden.

Martin, Elaine, *Adjunct Assistant Professor of Library and Information Studies*, 2006. D.A., 2005, Simmons College.

Martin, Oanh H., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 1998, University of Washington.

Martin, Valerie Ann, *Adjunct Instructor of Nursing*, 2005. M.S., 2004, University of Rhode Island.

Martineau, Leslie, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1986. B.S., 1977, Rhode Island College.

Martins, Diane, *Adjunct Associate Professor of Nursing*, 2005. Ph.D., 1996, University of Connecticut.

Marzilli, Lisa, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 1999, University of Rhode Island.

Masakowski, Yvonne R., *Adjunct Assistant Professor of Psychology*, 2007. Ph.D., 1996, The City University of New York.

Massaro, Marilyn, *Adjunct Instructor of Natural Resources Science*, 1992. M.A., 1976, State University of New York, Buffalo.

Massotti, Elaine M., *Adjunct Assistant Professor of Nursing*, 1999. M.S., 1989, Salve Regina University.

Matrone, Jeannette S., *Adjunct Assistant Professor of Nursing*, 1997. Ph.D., 1990, Boston College.

Maxwell, Christopher J., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 2002, University of Rhode Island.

★Mayer, Kenneth H., *Adjunct Assistant Professor of Clinical Laboratory Science*, 1988. M.D., 1977, Northwestern University Medical School.

Mayer, Larry A., *Adjunct Associate Professor of Ocean Engineering*, 1985. Ph.D., 1979, University of California.

Maynard-Agnew, Maureen M., *Adjunct Instructor of English*, 1994. M.A., 1973, Rhode Island College.

★Mayo III, Charles A., *Adjunct Professor of Oceanography*, 2003. Ph.D., 1973, University of Miami.

Mazzotta, Marisa, *Adjunct Professor of Environmental and Natural Resource Economics*, 2003. Ph.D., 1996, University of Rhode Island.

McBride, Linda M., *Adjunct Instructor of Nursing*, 1995. M.S., 1994, University of Rhode Island.

McCarron, Marie, *Adjunct Instructor of Nursing*, 1993. M.S., 1987, University of Rhode Island.

McClain, Walter J., *Adjunct Associate Professor of Pharmacy Practice*, 2003. Pharm.D., 1986, St. John's University.

McClellan, Nancy Jeanne, *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1985, University of Minnesota.

McConaughay, Edie Furia, *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1995, University of Rhode Island.

★McCorkle, Richard A., *Adjunct Professor of Physics*, 1993. Ph.D., 1970, North Carolina State University.

McCormick, Marie, *Adjunct Instructor of Nursing*, 2003. M.S., 2003, University of Rhode Island.

McCue, Pamela L., *Adjunct Instructor of Nursing*, 1999. M.S., 1994, University of Rhode Island.

McDonough, Kimberly, *Adjunct Professor of Pharmacy Practice*, 1992. Pharm.D., 1982, Purdue University.

McGillivray, Carolyn Ann, *Adjunct Instructor of Nursing*, 2000. M.S., 1992, University of Rhode Island.

McIntyre, Maryann, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1992. B.S., 1984, Rhode Island College.

McKeeff, Diane, *Adjunct Instructor of Nursing*, 2001. M.A., 1998, New York University.

McKeeffrey, Sue P., *Adjunct Instructor of Nursing*, 2001. M.S., 1989, University of Washington.

McKinney, Richard A., *Adjunct Assistant Professor of Natural Resources Science*, 2006. Ph.D., 2005, University of Rhode Island.

McMahon, Louise H., *Adjunct Assistant Professor of Nursing*, 1992. M.H.A., 1988, Clark University.

McWalters, Peter, *Adjunct Professor of Human Science and Services*, 1999. M.S., 1979, State University of New York, Brockport.

Medbery, Russell S., Jr., *Adjunct Assistant Professor of Nursing*, 2001. M.S.N., 1986, Columbia University.

★Meglio, Franklin, *Adjunct Assistant Professor of Clinical Laboratory Science*, 1980. M.S., 1980, Northeastern University.

★Mehta, Shashikant R., *Adjunct Assistant Professor of Microbiology*, 1990. Ph.D., 1984, University of Texas, Houston.

★Mello, David, *Adjunct Professor of Clinical Laboratory Science*, 1983. M.S., 1978, University of Massachusetts, Dartmouth.

Mello, Paul M., *Adjunct Assistant Professor of Physics*, 1985. M.A., 1980, University of Rhode Island.

Mellor, Barbara, *Adjunct Instructor of Nursing*, 2000. M.S., 1994, Case Western Reserve University.

Mendelsohn, Debbie Kiefer, *Adjunct Instructor of Nursing*, 2003. M.S., 1989, University of Rhode Island.

Mendes, Shirley A., *Adjunct Instructor of Nursing*, 1995. M.S., 1985, Pace University; F.N.P., 1992, University of Rhode Island.

Mendes, Theresa M., *Adjunct Instructor of Nursing*, 2004. M.B.A., 1996, Bryant College.

Menihan, Cydney A., *Adjunct Assistant Professor of Nursing*, 1991. M.S.N., 1986, California State University.

Menihan, Suzan J., *Adjunct Instructor of Nursing*, 2001. M.S., 1997, University of Rhode Island.

Messier, Richard H., *Adjunct Associate Professor of Mechanical Engineering and Applied Mechanics*, 1977. Ph.D., 1975, Brown University.

★Metheny, William, *Adjunct Assistant Professor of Clinical Laboratory Science*, 1997. Ph.D., 1985, Michigan State University.

★Method, Robert L., *Adjunct Professor of Ocean Engineering*, 1995. Ph.D., 1972, Kansas State University.

Metzger, Jane, *Adjunct Associate Professor of Nursing*, 2004. Ph.D., 2002, Widener University.

★Meyer, Elaine C., *Adjunct Associate Professor of Psychology*, 1997. Ph.D., 1990, University of Rhode Island.

Meyers, Irene M., *Adjunct Instructor of Nursing*, 1996. M.S.N., 1989, Yale University.

Middleton, David, *Adjunct Professor of Electrical Engineering*, 1966. Ph.D., 1947, Harvard University.

Midunsky, Karl H., *Adjunct Clinical Instructor of Business Administration*, 2005. M.B.A., 1971, Marquette University.

Milhaven, Annie Lally, *Adjunct Assistant Professor of Women's Studies*, 1994. M.T.S., 1989, Harvard University.

★Miller, David L., *Adjunct Associate Professor of Psychology*, 2006, 2003. Ph.D., 1993, Brown University.

Miller, James A., *Adjunct Assistant Professor of Nursing*, 2000. Ph.D., 1999, University of Rhode Island.

Miller, Peter, *Adjunct Assistant Professor of Nursing*, 1985. M.S., 1978, Boston University.

Miller, Philip N., *Adjunct Professor of Industrial and Systems Engineering*, 2005. Ph.D., 2004, University of Rhode Island.

Miller, Robin J., *Adjunct Instructor of Nursing*, 2004. M.S., 1996, University of Rhode Island.

Milstead, W. Bryan, *Adjunct Assistant Professor of Natural Resources Science*, 2004. Ph.D., 2000, Northern Illinois University.

Moellentin, Daniel, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 1984, University of Arkansas.

Moffitt, Colleen, *Adjunct Assistant Professor of Pharmacy Practice*, 2002. M.S., 1994, University of Rhode Island.

Mogawer, Walaa S., *Adjunct Assistant Professor of Civil and Environmental Engineering*, 1991. Ph.D., 1989, University of Rhode Island.

Mojaverian, Parviz, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 2002. Ph.D., 1980, Philadelphia College of Pharmacy and Science.

★Mollan, Matthew J., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2002. Ph.D., 1993, Rutgers University.

Molloy, Patricia, *Adjunct Assistant Professor of Nursing*, 1992. M.S., 1978, University of Rhode Island.

Molyneaux, Ronald Dale, *Adjunct Instructor of Nursing*, 1995. M.S., 1982, Illinois State University.

Molzon, Justina, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 1997. J.D., 1985, IIT Chicago-Kent College of Law.

Monkhouse, Donald C., *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 1992. Ph.D., 1970, University of Iowa.

Monnens, Helen L., *Adjunct Instructor of Nursing*, 1995. M.S.N., 1989, University of Wyoming.

★Monti, Peter, *Adjunct Associate Professor of Psychology*, 1977. Ph.D., 1974, University of Rhode Island.

Moore, Anne C., *Adjunct Instructor of Library and Information Studies*, 2004. Ph.D., 2001, New Mexico State University.

Moore, Anthony, *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1980. B.S., 1980, University of Rhode Island.

Moran, Noreen, *Adjunct Instructor of Nursing*, 2001. M.S., 1991, Case Western Reserve University.

Morelle, Deborah L., *Adjunct Instructor of Human Development and Family Studies*, 2005. M.A.T.C., 1995, Rhode Island College.

Moretti, Jill S., *Adjunct Instructor of Nursing*, 2001. M.S., 1991, University of Rhode Island.

Morgan, Barbara L., *Adjunct Instructor of Library and Information Studies*, 2004. J.D., 1995, University of Connecticut Law School.

Morin, Michael J., *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 2007. Ph.D., 1981, State University of New York, Buffalo.

Morin, Violet C., *Adjunct Assistant Professor of Nursing*, 2003. Ed.M., 1987, Harvard University.

Morisseau, Clarisse S., *Adjunct Instructor of Nursing*, 1995. M.S., 1990, University of Rhode Island.

Morrow, Alison, *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1990, University of California, San Francisco.

★Motte, Mark, *Adjunct Assistant Professor of Community Planning*, 1990. Ph.D., 1995, Rutgers-The State University of New Jersey.

Mottinger, Barbara, *Adjunct Instructor of Nursing*, 2006. M.S., 2003, University of Rhode Island.

★Mould, Diana R., *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 2004. Ph.D., 1989, Ohio State University College of Pharmacy.

Muddiman, Laurie R., *Adjunct Instructor of Nursing*, 1995. M.S., 1993, University of Rhode Island.

Muench, John D., *Adjunct Professor of Ocean Engineering*, 2007. Ph.D., 2001, University of Rhode Island.

Mullaney, Jeanne L., *Adjunct Instructor of Nursing*, 1999. M.A., 1997, Rhode Island College.

Mullaney, Joan K., *Adjunct Instructor of Nursing*, 1985. M.S., 1979, University of Rhode Island.

Muller, Michael R., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2004. Pharm.D., 2001, University of Rhode Island.

Mulvey, Trudy C., *Adjunct Instructor of Nursing*, 1994. M.S.N., 1991, Yale University School of Nursing.

★Munns, Wayne R., *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 1998. Ph.D., 1984, University of Rhode Island.

Murari Murphy, Laura, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 1983, University of Padua, Italy.

Murray, Sharon, *Adjunct Instructor of Nursing*, 1999. M.S., 1997, University of Rhode Island.

★Musick, John A., *Adjunct Professor of Fisheries, Animal and Veterinary Science*, 2000. Ph.D., 1969, Harvard University.

Myers, Deborah L., *Adjunct Assistant Professor of Nursing*, 1998. M.D., 1981, State University of New York, Stony Brook.

★Nagata, Ryoichi, *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 1995. M.D., 1983, St. Marianna University; Ph.D., 1991, Kagoshima University.

Nair, Vinit, *Adjunct Clinical Instructor of Pharmacy Practice*, 2004. M.S., 2004, University of Illinois, Chicago.

Najarian, Dean M., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 2000, University of Rhode Island.

Nanni, Linda, *Adjunct Assistant Professor of Nursing*, 2001, 1991. M.S., 1983, Georgetown University.

Nelson, James H., *Adjunct Assistant Professor of Physics*, 1985. M.S., 1968, Clarkson College of Technology.

Neugent, Dana, *Adjunct Assistant Professor of Film Media*, 2007. B.A., 1974, University of Rhode Island.

Neuhauer, Andrew P., *Adjunct Assistant Professor of Nursing*, 1999. M.D., 1983, George Washington University.

Neuville, Anne E., *Adjunct Instructor of Nursing*, 2005. M.S., 1998, University of Rhode Island.

Newcombe, Pat, *Adjunct Assistant Professor of Library and Information Studies*, 2007. J.D., 2001, Western New England College.

★Newman, Philip R., *Adjunct Professor of Human Development and Family Studies*, 2000. Ph.D., 1971, University of Michigan, Ann Arbor.

★Nilsson, Agneta, *Adjunct Assistant Professor of Nursing*, 2002. Ph.D., 2001, Göteborg University, Sweden.

★Nilsson, Kerstin, *Adjunct Associate Professor of Nursing*, 2005. Ph.D., 2003, Göteborg University, Sweden.

★Nissen, Eva, *Adjunct Associate Professor of Nursing*, 2004. Ph.D., 1996, Karolinska Institutet.

Nitecki, Danuta A., *Adjunct Instructor of Library and Information Studies*, 2004. Ph.D., 1995, University of Maryland.

Noll, Jill, *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1995, Case Western Reserve University.

Nowicki, Barbara L., *Adjunct Associate Professor of Natural Resources Science*, 2004. Ph.D., 1991, University of Rhode Island.

Nugent, Patrick J., *Adjunct Assistant Professor of Nursing*, 1998. M.D., 1985, Pennsylvania State University, Milton Hershey Medical Center.

Nugent, Christine N., *Adjunct Assistant Professor of Nursing*, 1998. M.S.N., 1973, Yale University School of Nursing.

O'Brien, Barbara, *Adjunct Clinical Associate Professor of Pharmacy Practice*, 2004. Ph.D., 1992, Ohio State University.

O'Connell, Allan F., Jr., *Adjunct Associate Professor of Natural Resources Science*, 2004. Ph.D., 1989, University of Massachusetts, Amherst.

O'Connell, Patricia, *Adjunct Instructor of Nursing*, 1992. M.S., 1987, Boston College.

Odean, Kathleen, *Adjunct Instructor of Library and Information Studies*, 2004. M.L.S., 1982, University of California, Berkeley.

★Olsen, Stephen, *Adjunct Professor of Oceanography*, 1997, and *Adjunct Associate Professor of Natural Resources Science*, 1987. M.S., 1970, University of Rhode Island.

Olson, David G., *Adjunct Associate Professor of Industrial Engineering*, 1980. Ph.D., 1971, Northwestern University.

O'Mahony, Daniel P., *Adjunct Instructor of Library and Information Studies*, 2004. M.S.L.S., 1988, Florida State University.

★O'Malley, Stephanie, *Adjunct Professor of Psychology*, 2005. Ph.D., 1983, Vanderbilt University.

★Omar, Mostafa M., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 1985. Ph.D., 1981, University of Rhode Island.

O'Neill, Eileen S., *Adjunct Associate Professor of Nursing*, 1996. Ph.D., 1992, University of Rhode Island.

O'Neill, William D., *Adjunct Professor of Civil and Environmental Engineering*, 2000. M.B.A., 1968, University of Connecticut.

★Opal, Steven M., *Adjunct Associate Professor of Clinical Laboratory Science*, 1988. M.D., 1976, Albany Medical College of Union University.

★O'Reilly, John E., *Adjunct Professor of Oceanography*, 2005. M.S., 1975, Rutgers University.

Osborne, Elaine M., *Adjunct Assistant Professor of Nursing*, 1985. M.S., 1977, Boston College.

Osgood, Charles F., *Adjunct Professor of Mathematics*, 1980. Ph.D., 1964, University of California, Berkeley.

★Otterness, Ivan, *Adjunct Professor of Biomedical and Pharmaceutical Sciences*, 2005. Ph.D., 1968, University of Southern California.

Owen, Patricia M., *Adjunct Instructor of Nursing*, 1991. M.S., 1980, Boston University.

Ozolins, Terence Robert Stanislav, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2006. Ph.D., 1998, McGill University.

Page, Dore, *Adjunct Assistant Professor, Library*, 2002. (Printer in Residence)

Paine, Donna, *Adjunct Assistant Professor of Pharmacy Practice*, 2003. M.B.A., 1993, University of Rhode Island.

Paiva, Andrea Eastwood, *Adjunct Assistant Professor of Psychology*, 2007. Ph.D., 2006, University of Rhode Island.

Palmer, Judy A., *Adjunct Instructor of Nursing*, 1988. M.S.N., 1982, Boston College.

Palmer, Lois, *Adjunct Instructor of Nursing*, 1998. M.S.N., 1991, Yale Graduate School of Nursing.

Palyszek, Christine V., *Adjunct Assistant Professor of Nursing*, 1995. M.S., 1982, The Catholic University of America.

Paolino, Ronald M., *Adjunct Clinical Professor of Pharmacy Practice*, 2003, 1998. Ph.D., 1963, Purdue University.

Papazian, Donna A., *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1987, Columbia University.

Pape, Whitney D., *Adjunct Instructor of Library and Information Studies*, 2004. M.L.I.S., 1996, University of Texas at Austin.

★Parella, Mary A., *Adjunct Assistant Professor of Community Planning*, 1992. M.C.P., 1989, University of Rhode Island.

★Park, Jae-Hun, *Adjunct Professor of Oceanography*, 2005. Ph.D., 2001, Hiroshima University.

Parsons, John P., *Adjunct Associate Professor of Nursing*, 1995. Ph.D., 1976, Kent State University.

★Patton, Alexander J., *Adjunct Professor of Mechanical Engineering and Applied Mechanics*, 1989. Ph.D., 1972, University of Rhode Island.

★Paul, John F., *Adjunct Professor of Natural Resources Science*, 2003. Ph.D., 1974, Case Western Reserve University.

Pavlow, Rose, *Adjunct Instructor of Nursing*, 1999. M.A., 1976, Goddard College.

★Payne, Kenneth F., *Adjunct Associate Professor of Community Planning and Urban Affairs*, 1995. M.C.P., 1973, University of Rhode Island.

Pedro, Henrique T., R.Ph., *Adjunct Instructor of Pharmacy Practice*, 1990. B.S., 1977, University of Rhode Island.

Peigelbeck, W. Gary, *Adjunct Assistant Professor of Communication Studies*, 1998. D.A., 1997, Audiology Foundation of America.

★Pence, Deborah V., *Adjunct Assistant Professor of Mechanical Engineering and Applied Mechanics*, 1998. Ph.D., 1995, Clemson University.

Pereira, Gary L., *Adjunct Clinical Instructor of Clinical Laboratory Science*, 1993. B.S., 1976, Southeastern Massachusetts University.

★Perez, Kenneth T., *Adjunct Professor of Natural Resources Science*, 1996. Ph.D., 1971, State University of North Carolina, Raleigh.

Perfetto, Eleanor M., *Adjunct Assistant Professor of Pharmacy Practice*, 2002. Ph.D., 1992, University of North Carolina.

★Perkins, Henry T., *Adjunct Professor of Oceanography*, 2004. Ph.D., 1970, Massachusetts Institute of Technology.

Perry, Barbara Miller, *Adjunct Assistant Professor of Pharmacy Practice*, 2003. M.P.H., 1983, Boston University School of Medicine.

Peters, Esther C., *Adjunct Assistant Professor of Natural Resources Science*, 2006. Ph.D., 1984, University of Rhode Island.

Petropoulos, Peter, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. M.D., 1985, Massachusetts College of Pharmacy.

Pfeiffer, Margaret, *Adjunct Instructor of Nursing*, 1997. M.S., 1981, Boston College.

Phillips, J. Christopher, *Adjunct Associate Professor of Chemistry*, 1997. Ph.D., 1969, Ohio State University.

Pinar, Hallit, *Adjunct Professor of Clinical Laboratory Science*, 1997. M.D., 1974, Amcara University.

Pingitore, Francine R.B., *Adjunct Instructor of Nursing*, 2000, 2007. M.S., 1996, University of San Francisco.

Pisharodi, Latha, *Adjunct Associate Professor of Clinical Laboratory Science*, 2004. M.D., 1982 University of Kerana.

★Pivarnik, Lori F., *Adjunct Associate Professor of Nutrition and Food Science*, 2007, 2000. Ph.D., 1990, University of Rhode Island.

Plante, Robert, *Adjunct Instructor of Nursing*, 2005. M.S., 1999, University of Rhode Island.

Plante, Susan L., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 1998, University of Rhode Island.

Pleau, Annette, *Adjunct Instructor of Nursing*, 2002. B.S., 1993, Colorado State University.

Pomfret, Denise Duplessis, *Adjunct Instructor of Nursing*, 1994. M.S., 1986, University of Rhode Island.

Pouillon, Amy S., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 1999, Ohio Northern University.

Powell, Candace E., *Adjunct Instructor of Nursing*, 2001. M.S., 1998, Salve Regina University.

Power, Anne Kathryn, *Adjunct Assistant Professor of Human Science and Services*, 2003. M.Ed., 1975, Western Maryland College.

Preisser, Evan L., *Adjunct Assistant Professor of Biological Sciences*, 2005. Ph.D., 2004, University of California, Davis.

★Prochaska, Janice M., *Adjunct Professor of Human Development and Family Studies*, 2002. Ph.D., 1998, Boston College.

★Profughi, Victor L., *Adjunct Professor of Political Science*, 1991. Ph.D., 1967, University of Pittsburgh.

★Pruell, Richard J., *Adjunct Professor of Oceanography*, 2004. Ph.D., 1984, University of Rhode Island.

Putnam, Ellen Cay, *Adjunct Instructor of Nursing*, 1998. M.S.N., 1990, Yale University.

Quadros Dianne H., *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1990, University of Miami.

Quddus, M. Ruhul, *Adjunct Assistant Professor of Clinical Laboratory Science*, 2004. M.D., 1983. Dhaka Medical College.

★Quinley, Eva, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2005. M.S., 1984, University of Memphis.

Radka, Linda H., *Adjunct Instructor of Nursing*, 1992. M.N., 1984, University of Washington.

Rajagopalan, Prabhu, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences*, 2003. Ph.D., 1996, University of Georgia.

Ramsay, Karen M., *Adjunct Assistant Professor of Library and Information Studies*, 2004. M.L.S., 1977, University of Rhode Island.

Rana, Khurram A., *Adjunct Associate Professor of Pharmacy Practice*, 2003. Pharm.D., 1993, University of Michigan.

★Ravenscroft, Robert A., Jr., *Adjunct Assistant Professor of Computer Science*, 1994. Ph.D., 1991, Brown University.

★Raymond, Patricia M., *Adjunct Assistant Professor of Gerontology*, 1982, and *Adjunct Assistant Professor of Psychology*, 1986. Ph.D., 1981, University of Rhode Island.

Ready, Robert W., *Adjunct Assistant Professor of Nursing*, 1999. M.S., 1988, University of Washington.

★Redding, Colleen, *Adjunct Professor of Psychology*, 2007, 1999. Ph.D., 1993, University of Rhode Island.

★Reed, J. Michael, *Adjunct Associate Professor of Natural Resources Science*, 2006. Ph.D., 1989, North Carolina State University.

Resca, Andria, *Adjunct Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 2002, University of Rhode Island.

Resnik, Linda, *Adjunct Assistant Professor of Physical Therapy*, 2003. Ph.D., 2002, Nova Southeastern University.

★Reurmann, Miriam, *Adjunct Assistant Professor of History*, 2006. Ph.D., 1998, Brown University.

Reynolds, Dianne T., *Adjunct Assistant Professor of Nursing*, 1998. M.S.N., 1986, University of California, San Francisco; Certificate in Nurse Midwifery, 1986, University of California, San Diego.

★Rheault, Robert B., Jr., *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science*, 1999. Ph.D., 1995, University of Rhode Island.

Rhodes, Jean M.R., *Adjunct Assistant Professor of Nursing*, 1995. Ph.D., 1990, University of South Carolina.

Ricci, Elizabeth S., *Adjunct Instructor of Nursing*, 2001. M.S.N., 1985, Boston College.

Rich, Beverly Waldman, *Adjunct Instructor of Nursing*, 1993. M.S., 1988, Boston University.

Ricks, Lynn, *Adjunct Instructor of Nursing*, 1998. M.S.N., 1995, Boston College.

Riddell, Evelyn, *Adjunct Assistant Professor of Clinical Laboratory Science*, 2003. B.S., 1993, Eastern Connecticut State University.

Richards, Matthew M., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 2003. Ph.D., 2000, University of Connecticut.

Richards, Suzanne C., *Adjunct Associate Professor of Nursing*, 1999, 1987. M.D., 1972, Harvard University.

Rippey, Scott R., *Adjunct Assistant Professor of Microbiology*, 1984. Ph.D., 1979, University of Rhode Island.

Rizk, Yvonne, *Adjunct Professor of Clinical Laboratory Science*, 1997. M.D., 1978, University of Khartoum.

Roberti, Ann Marie, *Adjunct Clinical Assistant Professor of Clinical Laboratory Science*, 1986. M.S., 1980, Southeastern Massachusetts University.

Roberts, Diane L., *Adjunct Instructor of Nursing*, 1999. M.S., 1996, University of Rhode Island.

★Roberts, Eric M., *Adjunct Assistant Professor of Biological Sciences and Plant Sciences*, 1991. Ph.D., 1991, University of Texas, Austin.

Roche, Kathleen, *Adjunct Instructor of Nursing*, 2006. M.S., 1989, Northern Illinois University.

Rochon, Therese E., *Adjunct Instructor of Nursing*, 2002. M.S., 2000, University of Rhode Island.

Rockwell, Robert F., *Adjunct Professor of Natural Resources Science*, 2006. Ph.D., 1975, Queen's University.

Rodman, Clarke A., *Adjunct Research Professor of Mechanical Engineering and Applied Mechanics*, 1991. A.B., 1946, Harvard University.

Rogers, Beverly B., *Adjunct Assistant Professor of Microbiology*, 1990. M.D., 1982, University of Texas, Austin.

†★Roman, Charles T., *Adjunct Professor of Oceanography*, 1990. Ph.D., 1981, University of Delaware.

★Romeo, Thomas, *Adjunct Professor of Physical Therapy and Biomedical and Pharmaceutical Sciences*, 2003, 1999. M.Ed., 1969, Northeastern University.

Rooks, Susan Marie, *Adjunct Instructor of Nursing*, 2000. M.S., 1994, University of Washington.

Rose, Alison, *Adjunct Assistant Professor of History*, 2005. Ph.D., 1998, Hebrew University, Jerusalem, Israel.

Rose, Jennifer S., *Adjunct Assistant Professor of Psychology*, 2005. Ph.D., 1994, University of Rhode Island.

Rose, Susan C., *Adjunct Instructor of Nursing*, 1996. M.S.N., 1987, Yale University.

Rosenbloom, Mindy Sharon, *Adjunct Assistant Professor of Nursing*, 1997. M.D., 1985, Rutgers—The State University of New Jersey.

Ross, William E., *Adjunct Assistant Professor of Library and Information Studies*, 2007, 1991. Ph.D., 1992, American University, Washington, D.C.

★Rossi, Susan R., *Adjunct Associate Professor of Nursing*, 2000, 1997. Ph.D., 1994, University of Rhode Island.

Roth, Karen, *Adjunct Instructor of Pharmacy Practice*, 2004. B.S., 1981, University of Rhode Island.

Rousseau, Amy Levi, *Adjunct Assistant Professor of Nursing*, 2001. Ph.D., 1999, University of Pennsylvania.

Rowe-Varone, Linda J., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 2001, University of Rhode Island.

Rubenstein, Norman, *Adjunct Assistant Professor of Natural Resources Science*, 2002. M.S., 1976, University of West Florida.

Rubin, Alvin F., *Adjunct Assistant Professor of Gerontology*, 1980. M.S., 1958, Yeshiva University.

★Rubin, Robert V., *Adjunct Assistant Professor of Computer Science*, 1989. Ph.D., 1988, Brown University.

Rudnic, Edward M., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences*, 1993. M.C.P., 1981, University of Rhode Island.

★Ruffa, Anthony A., *Adjunct Associate Professor of Physics*, 2001. Ph.D., 1990, Yale University.

★Ruggiero, Peter D., *Adjunct Associate Professor of Community Planning and Urban Affairs, 1995. M.C.P., 1981, University of Rhode Island.*

Rumowicz, Edmund S., *Adjunct Associate Professor of Textiles, Fashion Merchandising, and Design, 1987. B.S., 1957, University of Rhode Island.*

Russell, Lynette K., *Adjunct Instructor of Nursing, 1996. M.S., 1973, Columbia University.*

★Rutherford, Scott, *Adjunct Assistant Professor of Geosciences, 2001. Ph.D., 1999, University of Rhode Island.*

Ryan, Thomas M., *Adjunct Professor of Pharmacy Practice, 1990. B.S., 1975, University of Rhode Island.*

Sado, Pierre A., *Adjunct Professor of Biomedical and Pharmaceutical Sciences, 1992. Sc.D., 1978, University of Rennes, France.*

Salisbury, Amy Lynn, *Adjunct Assistant Professor of Nursing, 2006. Ph.D., 2000, University of Connecticut.*

Saltonstall, Kristin, *Adjunct Assistant Professor of Natural Resources Science, 2005. Ph.D., 2002, Yale University.*

Samale, Michael T., *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences, 2005. M.S., 1972, Boston College.*

★Sanford, Christopher P.J., *Adjunct Associate Professor of Biological Sciences, 2004. Ph.D., 1988, University of London, Birkbeck College.*

Sawtelle, Suzanne, *Adjunct Instructor of Nursing, 1996. M.S., 1991, University of Rhode Island.*

★Schatz, Daniel J., *Adjunct Assistant Professor of Community Planning and Area Development, 1982. J.D., 1978, University of Maine.*

Schlesselman, Michael, *Adjunct Assistant Professor of Pharmacy Practice, 2004. Pharm.D., 1988, Creighton University School of Pharmacy.*

Schneider, Mark S., *Adjunct Assistant Professor of Psychology, 2006. Ph.D., 1991, State University of New York at Stony Brook.*

Schock, Steven G., *Adjunct Assistant Professor of Ocean Engineering, 1990. Ph.D., 1989, University of Rhode Island.*

Schoman, Lynne, *Adjunct Assistant Professor of Nursing, 1992. M.S., 1982, Adelphi University.*

Schottland, Edward M., *Adjunct Assistant Professor of Nursing, 2001, 1995. M.P.S., 1973, Cornell University, Sloan Institute of Hospital Administration.*

★Schuler, Maik, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences, 2001. Ph.D., 1994, University of Kaiserslautern, Germany.*

★Schwartz, Malia L., *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science, 2005. Ph.D., 2001, University of Rhode Island.*

Schwartz, Stanley, *Adjunct Clinical Associate Professor of Clinical Laboratory Science, 1986. M.D., 1974, University of Connecticut School of Medicine.*

Scioli, Anthony, *Adjunct Professor of Psychology, 2005. Ph.D., 1990, University of Rhode Island.*

Scorpio, Ralph, *Adjunct Professor of Biochemistry, Microbiology and Molecular Genetics, 1999. Ph.D., 1966, University of Rhode Island.*

★Sebelia, Linda, *Adjunct Professor of Nutrition and Food Science, 2007, 1989. M.S., 1974, Ohio State University.*

★Sebens, Kenneth P., *Adjunct Professor of Biological Sciences, 1998. Ph.D., 1977, University of Washington.*

Seibel, Brad A., *Adjunct Assistant Professor of Biological Sciences, 2003. Ph.D., 1998, University of California, Santa Barbara.*

Seidler, Susan S., *Adjunct Instructor of Nursing, 1989. M.S., 1986, University of Rhode Island.*

★Seifer, Ronald, *Adjunct Associate Professor of Psychology, 1990. Ph.D., 1981, University of Rochester.*

Seifert, Gerald, *Adjunct Professor of Marine Affairs, 1982. J.D., 1964, Indiana University.*

Sepe, Anna Marie, *Adjunct Instructor of Nursing, 2007. M.S., 1992, Rhode Island College.*

Sepe, Raymond, *Adjunct Assistant Professor of Electrical Engineering, 1996. Ph.D., 1990, Massachusetts Institute of Technology.*

Serabian, Beverly, *Adjunct Assistant Professor of Gerontology, 1983. Ph.D., 1981, California School of Professional Psychology.*

Serdakowski, Joseph A., *Adjunct Assistant Professor of Chemical Engineering, 1992. Ph.D., 1990, Brown University.*

★Serra, David A., *Adjunct Clinical Assistant Professor of Fisheries, Animal and Veterinary Science, 1997. V.M.D., 1983, University of Pennsylvania.*

Sesin, Paul, *Adjunct Clinical Professor of Pharmacy Practice, 2003. Pharm.D., 1975, Duquesne University.*

Shah, Ajit K., *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences, 2002. Ph.D., 1989, University of Minnesota.*

Shah, Navnit, *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences, 1993. Ph.D., 1981, St. John's University.*

★Shamoon, Samuel J., *Adjunct Associate Professor of Community Planning and Urban Affairs, 1995. M.C.P., 1970, University of Rhode Island.*

Sharma, Surendra, *Adjunct Professor of Biomedical and Pharmaceutical Sciences, 2006. M.D., 2006, Linkoping University, Sweden.*

Sharron, Amy Marie, *Adjunct Assistant Professor of Nursing, 2000. M.S., 1993, University of Arizona.*

Shea, Alexandra M., *Adjunct Instructor of Nursing, 1998. M.S.N., 1990, Yale University.*

Shea, Nancy M., *Adjunct Instructor of Nursing, 1993. M.A., 1980, University of Iowa.*

Sheehan, Judy L., *Adjunct Instructor of Nursing, 1994. M.S., 1984, University of Rhode Island.*

★Sheehan, Peter M., *Adjunct Professor of Oceanography, 2004. Ph.D., 1971, University of California, Berkeley.*

★Sheff, Michael, *Adjunct Professor of Clinical Laboratory Science, 1988. Ph.D., 1957, University of Sheffield, England.*

Shepp, Bryan E., *Adjunct Professor of Communicative Disorders, 1985. Ph.D., 1959, University of Maryland.*

Sheremet, Vitalii, *Adjunct Professor of Oceanography, 2005. Ph.D., 1996, Scripps Institution of Oceanography, University of California, San Diego.*

Sheridan, Susan M., *Adjunct Instructor of Library and Information Studies, 2004. M.P.A., 1984, University of Massachusetts at Amherst.*

Sherman, Jeanne D., *Adjunct Assistant Professor of Nursing, 1997. M.S., 1974, University of Rhode Island.*

Sherouse, Linda D., *Adjunct Instructor of Library and Information Studies, 2004. M.L.I.S., 1996, University of Rhode Island.*

Sherwood, Jessica, *Adjunct Assistant Professor of Sociology and Anthropology, 2005. Ph.D., 2004, North Carolina State University.*

★Shogren, Jason F., *Adjunct Professor of Environmental and Natural Resource Economics, 1995. Ph.D., 1986, University of Wyoming.*

★Shonting, David H., *Adjunct Professor of Ocean Engineering, 1987. Sc.D., 1966, Massachusetts Institute of Technology.*

Shuurman, Henk, *Adjunct Professor of Biomedical and Pharmaceutical Sciences, 2003. Ph.D., 1977, University of Utrecht, The Netherlands.*

Siegel, Cynthia, *Adjunct Instructor of Nursing, 2001. M.S., 1997, Yale University.*

Sienkiewicz, George, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences, 2002. Ph.D., 1995, University of Rhode Island.*

Silva, Barbara, *Adjunct Instructor of Nursing, 1992. M.S., 1990, University of Rhode Island.*

Silver, Barbara E., *Adjunct Assistant Professor of Psychology, 2007. Ph.D., 1999, University of Rhode Island.*

Simeone, Michael L., *Adjunct Assistant Professor of Pharmacy Practice, 1990. M.B.A., 1987, Bryant College.*

Simkowski, Paul J., *Adjunct Instructor of Nursing, 2001. M.S., 1994, MGH Institute of Health Professions.*

Singer, Janet, *Adjunct Instructor of Nursing, 2005. M.S.N., 1991, Yale University.*

Singer, Roberta N., *Adjunct Assistant Professor of Communicative Disorders, 1986. M.S., 1978, University of Rhode Island.*

Singer, Steven, *Adjunct Assistant Professor of Nursing, 2001. M.D., 1992, Rush Medical College.*

★Sjöström, Björn Alvar, *Adjunct Professor of Nursing, 2004, 2001. D.N.Sc., 2000, Göteborg University, Sweden.*

Skeffington, Patrick J., *Adjunct Clinical Assistant Professor of Pharmacy Practice, 2003. Pharm.D., 2000, University of Rhode Island.*

Slonka, Dennis J., *Adjunct Clinical Assistant Professor of Pharmacy Practice, 1998. Pharm.D., 1997, University of Rhode Island.*

Small, Robert W., Jr., *Adjunct Assistant Professor of Nursing, 1999. M.D., 1988, Loyola University, Stritch School of Medicine.*

Smeal, Steven, *Adjunct Clinical Instructor of Clinical Laboratory Science, 1980. B.S., 1978, University of Rhode Island.*

Smith, Carol J., *Adjunct Instructor of Nursing, 1991. M.S., 1987, University of Rhode Island.*

★Smith, David C., *Adjunct Associate Professor of Biological Sciences, 2005, 2001. Ph.D., 1994, University of California, San Diego.*

Smith Peter D., *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences, 2007. B.S., 1971, Roger Williams University.*

★Smith, Peter J. S., *Adjunct Professor of Biological Sciences, 2001. Ph.D., 1979, Aberdeen University, Scotland.*

Smith, Richard D., *Adjunct Assistant Professor of Nursing, 1991. M.D., 1971, Georgetown University School of Medicine.*

Smith, Richardson, *Adjunct Assistant Professor of Film Media, 2006. J.D., 1977, Suffolk University School of Law.*

Smokler, Herbert J., *Adjunct Associate Professor of Nursing, 1997. M.D., 1959, State University of New York, College of Medicine, New York City.*

★Smolowitz, Roxanna M., *Adjunct Professor of Fisheries, Animal and Veterinary Science, 2000. D.V.M., 1981, Purdue University.*

Soja, Walter D., *Adjunct Clinical Associate Professor of Pharmacy Practice, 2003, 1981. Pharm.D., 1999, University of Rhode Island.*

Sokoloff, Christina Bond, *Adjunct Instructor of Nursing, 2006. M.S., 1985, University of Rhode Island.*

Solis, Jon, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences, 2003. M.D., 1990, Walter Reed Army Medical Center.*

Solomon, Elizabeth Anne, *Adjunct Instructor of Nursing, 1989. M.S., 1986, University of Hawaii, Manoa.*

Sorensen, Jens C., *Adjunct Associate Professor of Marine Affairs, 1985. Ph.D., 1978, University of California, Berkeley.*

Sosa, Mary Ellen Burke, *Adjunct Assistant Professor of Nursing, 1997. M.S., 1983, Boston University.*

Spearman, Amy L., *Adjunct Instructor of Nursing, 1995. M.S.N., 1990, University of California, San Francisco.*

Spellun, Wendy B., *Adjunct Instructor of Nursing, 1998. M.S.N., 1982, Adelphi University.*

★Spiegelman, Marc W., *Adjunct Associate Professor of Geosciences, 2000. Ph.D., 1989, University of Cambridge, United Kingdom.*

Spindell Lentz, Marcia D., *Adjunct Instructor of Nursing, 1999. M.A., 1977, New York University School of Education, Nursing and Allied Health Professionals.*

Spink, June T., *Adjunct Clinical Assistant Professor of Pharmacy Practice, 2003. B.S., 1976, University of Rhode Island.*

Splittergerber, Judy, *Adjunct Instructor of Nursing, 2001. M.S., 1992, Yale University.*

Squillante, Emilio, *Adjunct Assistant Professor of Biomedical and Pharmaceutical Sciences, 2002. Ph.D., 1993, University of Rhode Island.*

Stamoulis, Chrysanthi C., *Adjunct Assistant Professor of Nursing, 1992. M.B.A., 1983, Bryant College.*

Stankus, Anthony, *Adjunct Instructor of Library and Information Studies, 1982. M.L.S., 1976, University of Rhode Island.*

★Steele, Mark A., *Adjunct Assistant Professor of Natural Resources Science, 2003. Ph.D., 1995, University of California, Santa Barbara.*

Steinhardt, Linda, *Adjunct Instructor of Nursing, 2005. M.S., 1993, Pace University, Lienhard School of Nursing.*

Steinhoff, Margaret, *Adjunct Professor of Clinical Laboratory Science, 1997. M.D., 1983, Washington University.*

★Stephenson, Peter, *Adjunct Assistant Professor of Computer Science, 2001. Ph.D., 1998, James Cook University of North Queensland.*

Sterling, Harry S., *Adjunct Assistant Professor of Human Development and Family Studies, 1986. Ph.D., 1979, Cornell University.*

★Stern, Robert Andrew, *Adjunct Professor of Psychology, 1996. Ph.D., 1988, University of Rhode Island.*

Stimson, Debra, *Adjunct Instructor of Nursing, 1996. M.S., 1985, University of Colorado.*

Stone-Godena, Marianne Terisa, *Adjunct Instructor of Nursing, 1996. M.S., 1977, St. Louis University.*

Stoukides, John Aristotle, *Adjunct Associate Professor of Nursing, 1998. M.D., 1989, Tufts University.*

★Strauss, Charles M., *Adjunct Associate Professor of Computer Science, 1992. Ph.D., 1969, Brown University.*

★Streit, Roy L., *Adjunct Professor of Mathematics, 1996. Ph.D., 1978, University of Rhode Island.*

Stringer, Sharon E., *Adjunct Clinical Instructor of Clinical Laboratory Science, 1993. B.S., 1979, Framingham State College.*

★Stucker, Brent, *Adjunct Assistant Professor of Industrial and Manufacturing Engineering, 2002. Ph.D., 1997, Texas A&M University.*

Stulik, Anne A., *Adjunct Instructor of Nursing, 1992. M.S.N., 1985, State University of New York, Buffalo.*

★Sullivan, Edmund J., *Adjunct Professor of Ocean Engineering, 1997. Ph.D., 1970, University of Rhode Island.*

Sullivan, Elaine D., *Adjunct Assistant Professor of Nursing, 1997. M.S., 1986, University of Rhode Island.*

Sullivan, Susan C., *Adjunct Instructor of Nursing, 1995. M.S., 1994, Salve Regina University.*

Sung, C. James, *Adjunct Professor of Clinical Laboratory Science, 1997. M.D., 1984, Chung Shan Medical and Dental College.*

★Sutyrin, Georgi G., *Adjunct Professor of Oceanography, 2003. Ph.D., 1974, Russian Academy of Sciences.*

Sylvia, J. Gerin, *Adjunct Special Lecturer in Industrial Engineering, 1980. M.Ed., 1969, Northeastern University.*

Szymanski, Dennis J., *Adjunct Associate Professor of Biomedical and Pharmaceutical Sciences, 2002. Ph.D., 1978, Wayne State University.*

Tapley, Ronald, *Adjunct Assistant Professor of Pharmacy Practice, 1997. Pharm.D., 1996, Idaho State University.*

Tarlov, Elizabeth C., *Adjunct Instructor of Nursing, 1989. M.S., 1983, Pace University, Lienhard School of Nursing.*

★Tavtravahi, Umadevi, *Adjunct Associate Professor of Clinical Laboratory Science, 1997. Ph.D., 1980, Columbia University.*

★Taylor, Suzanne, *Adjunct Professor of Labor and Industrial Relations, 1987. Ph.D., 1970, University of Connecticut.*

★Taylorson, Raymond B., *Adjunct Professor of Plant Sciences, 1990. Ph.D., 1960, University of Wisconsin, Madison.*

Tebbets, Diane R., *Adjunct Assistant Professor of Library and Information Studies, 1985. D.A., 1985, Simmons College.*

Teft, Brian C., *Adjunct Assistant Professor of Natural Resources Science, 2003. M.S., 1981, Frostburg State University.*

Tegan, Elizabeth A., *Adjunct Instructor of Nursing, 1999. M.S., 1965, University of California.*

Tehan, Kerrie E., *Adjunct Instructor of Nursing, 2007. M.A., 2001, Hofstra University.*

Thai, Xia, *Adjunct Assistant Professor of Pharmacy Practice, 2006. Pharm.D., 2001, Massachusetts College of Pharmacy.*

★Thomas, Carol J., *Adjunct Professor of Community Planning and Area Development, 1971. M.S., 1948, University of Connecticut.*

Thompson, Kenneth P., *Adjunct Instructor of Journalism, 1990. B.A., 1989, University of Rhode Island.*

★Thursby, Glen D., *Adjunct Associate Professor of Biological Sciences, 1987. Ph.D., 1983, University of Rhode Island.*

Tierney, Eileen M., *Adjunct Instructor of Library and Information Studies, 2004. M.L.S., 1982, University of Rhode Island.*

Tierney, Timothy, *Adjunct Assistant Professor of Education, 1981, Adjunct Assistant Professor of Library and Information Studies, 2004; and Adjunct Assistant Professor of Film Media, 2007. M.A., 1976, University of Rhode Island.*

★Tigan, Mark, *Adjunct Assistant Professor of Community Planning and Urban Affairs, 1995. M.P.A., 1972, San Jose State University.*

Tillotson, Mary Ellen K., *Adjunct Assistant Professor of Psychology, 2003. Ph.D., 1998, University of Rhode Island.*

★Ting, Naitee, *Adjunct Associate Professor of Computer Science and Statistics, 1998. Ph.D., 1987, Colorado State University.*

Tobias, Jerry V., *Adjunct Professor of Communicative Disorders, 1985. Ph.D., 1950, Case Western Reserve University.*

Torres, Carlota, *Adjunct Instructor of Nursing, 1996. M.S., 1975, Boston University.*

Toscani, Michael R., *Adjunct Clinical Associate Professor of Pharmacy Practice, 2003. Pharm.D., 1982, St. John's University.*

Tourjee, Mary Ann, *Adjunct Instructor of Library and Information Studies, 2004. M.S.L.S., 1979, University of Kentucky.*

Towers, Nancy Holden, *Adjunct Instructor of Nursing, 2005. M.S., 1978, University of Rhode Island.*

Traines, Mark L., *Adjunct Assistant Professor of Nursing, 1989. M.D., 1981, Baylor University.*

Trevino, Belzahet, *Adjunct Assistant Professor of Chemical Engineering, 1994. Ph.D., 1993, University of Rhode Island.*

★Tucker, Wayne, *Adjunct Associate Professor of Mechanical Engineering and Applied Mechanics, 1991. Ph.D., 1987, University of Rhode Island.*

Turnbaugh, Sarah R. Peabody, *Adjunct Associate Professor of Sociology and Anthropology, 2006. 1985. M.S., 1977, University of Rhode Island.*

★Twardowski, Michael S., *Adjunct Professor of Oceanography, 2003. Ph.D., 1998, University of Rhode Island.*

★Tyack, Peter L., *Adjunct Professor of Oceanography, 2001. Ph.D., 1982, Rockefeller University.*

Tyle, Praveen, *Adjunct Professor of Biomedical and Pharmaceutical Sciences, 2002. Ph.D., 1984, Ohio State University.*

★Uhlman, James S., *Adjunct Associate Professor of Ocean Engineering, 1993. Ph.D., 1983, Massachusetts Institute of Technology.*

Ulbright, Catherine E., *Adjunct Clinical Assistant Professor of Pharmacy Practice, 2003. Pharm.D., 2001, Massachusetts College of Pharmacy.*

★Ullman, David S., *Adjunct Professor of Oceanography, 2002. Ph.D., 1996, State University of New York at Stony Brook.*

Urbani, Lynne A., *Adjunct Assistant Professor of Pharmacy Practice, 2002. M.S., 1990, Salve Regina College.*

Uustall, Diann B., *Adjunct Associate Professor of Nursing, 1996. Ed.D., 1983, University of Massachusetts.*

Vallee, Glenn E., *Adjunct Assistant Professor of Mechanical Engineering and Applied Mechanics, 1995. Ph.D., 1995, University of Rhode Island.*

Valliant, Anne, *Adjunct Instructor of Nursing, 2001. M.S., 1997, Massachusetts General Hospital.*

Vanderslice, Robert R., *Adjunct Associate Professor of Nursing, 2007. Ph.D., 1986, North Carolina State University.*

Vanhaaren, Anne, *Adjunct Clinical Assistant Professor of Pharmacy Practice, 2005. Pharm.D., 2000, University of Rhode Island.*

★Varna-Garis, Ann M., *Adjunct Associate Professor of Psychology, 1997. Ph.D., 1977, University of Rhode Island.*

Venkatraman, Padma T., *Adjunct Professor of Oceanography, 2007. Ph.D., 2001, College of William and Mary.*

Verbeek, Olga, *Adjunct Instructor of Library and Information Studies, 2004. M.L.I.S., 1998, University of Rhode Island.*

Veri, Albert R., *Adjunct Associate Professor of Community Planning and Area Development, 1984. M.L.A., 1969, Harvard University.*

Vezza, Phyllis, *Adjunct Assistant Professor of Clinical Laboratory Science, 2003. M.D., 1992, George Washington University.*

★Vincent, II, Harold Thomas, *Adjunct Assistant Professor of Ocean Engineering, 2001. Ph.D., 2001, University of Rhode Island.*

Vohr, Fred H., *Adjunct Associate Professor of Nursing, 1997. M.D., 1964, Albany Medical College.*

Vollucci, Elizabeth A., *Adjunct Instructor of Nursing, 2005. M.S., 2000, University of Rhode Island.*

Vouros, Paul, *Adjunct Professor of Biochemistry and Biophysics, 1988. Ph.D., 1965, Massachusetts Institute of Technology.*

Wachtel, Tom J., *Adjunct Professor of Nursing, 1997. M.D., 1973, Faculte de Medecine de Strasbourg, France.*

Wacker, Margaret S., *Adjunct Associate Professor of Nursing, 1997. Ph.D., 1987, New York University.*

Wagner, Richard L., *Adjunct Professor of Pharmacy Practice, 1985. M.D., 1975, Yale Medical School.*

Wallace, Mark C., *Adjunct Assistant Professor of Natural Resources Science, 1993. Ph.D., 1991, University of Arizona.*

Walser, Karen, *Adjunct Instructor of Nursing, 1996. M.S., 1988, Georgetown University.*

Walsh, Catherine D., *Adjunct Assistant Professor of Nursing, 1997. M.A., 1982, Seton Hall University.*

Walsh, Edward J., *Adjunct Professor of Oceanography, 2005. Ph.D., 1967, Northeastern University.*

†★Wang, Yong, *Adjunct Assistant Professor of Natural Resources Science, 2000. Ph.D., 1993, University of Southern Mississippi.*

Ward, John, *Adjunct Professor of Environmental and Natural Resource Economics, 2003. Ph.D., 1991, University of Rhode Island.*

Ward, Morris A., *Adjunct Assistant Professor of Journalism, 2002. M.A., 1971, Pennsylvania State University.*

Ward, Pamela J., *Adjunct Instructor of Nursing, 2000. M.P.H., 1994, Boston University School of Public Health.*

Wardwell, Douglas O., *Adjunct Assistant Professor of Communication Studies, 1998. Ed.D., 1975, Nova University.*

Warford, Susan D.G., *Adjunct Instructor of Human Development and Family Studies, 1999. M.Ed., 1983, University of Massachusetts, Amherst.*

★Warner, Patricia C., *Adjunct Associate Professor of Textiles, Fashion Merchandising, and Design, 1999. Ph.D., 1986, University of Minnesota.*

★Warner, Gregory, *Adjunct Assistant Professor of Computer Science and Statistics, 2004. Ph.D., 2000, University of Washington.*

Warren Stomberg, Margareta, *Adjunct Associate Professor of Nursing, 2005. Ph.D., 2004, Göteborg University, Sweden.*

Waters, William J., *Adjunct Assistant Professor of Nursing, 1985. Ph.D., 1974, Ohio State University.*

Watkins, William D., *Adjunct Professor of Microbiology, 1987. Ph.D., 1979, University of Rhode Island.*

Watson, Irene, *Adjunct Instructor of Nursing, 2005. M.S., 1996, University of Rhode Island.*

Weber, Sylvia, *Adjunct Instructor of Nursing, 2003. M.S., 1969, University of California, Los Angeles.*

Webster, Pamela, *Adjunct Associate Professor of Sociology, 2002. Ph.D., 1991, University of Michigan.*

Weinberg, Henry, *Adjunct Associate Professor of Mathematics, 1983. Ph.D., 1974, New York University.*

Weinstein-Farson, Laurie L., *Adjunct Assistant Professor of Sociology and Anthropology, 1988. Ph.D., 1983, Southern Methodist University.*

Weisberg, Naida, *Adjunct Instructor of Nursing, 1999. M.A., 1972, Goddard College.*

Welch, Frankie, *Adjunct Associate Professor of Textiles, Fashion Merchandising, and Design, 1987. B.A., 1948, Furman University.*

Welsh, Oliver L., *Adjunct Professor of Communicative Disorders, 1979. Ed.D., 1964, Boston University.*

West, Lucia Marie, *Adjunct Instructor of Nursing, 2000. M.S., 1995, University of Rhode Island.*

★Westcott, David, *Adjunct Associate Professor of Community Planning and Area Development, 1995. M.C.P., 1979, University of Rhode Island.*

★Westrick, Edward, *Adjunct Professor of Pharmacy Practice, 2002. Ph.D., 1999, University of Rhode Island.*

★Wetherbee, Bradley M., *Adjunct Assistant Professor of Fisheries, Animal and Veterinary Science, 1999. Ph.D., 1998, University of Hawaii.*

Weygand, Robert A., *Adjunct Assistant Professor of Landscape Architecture, 1989. B.F.A., 1971, B.S.C.E., 1976, University of Rhode Island.*

Weyhing, Mary, *Adjunct Assistant Professor of Psychology, 1985. Ph.D., 1983, University of Rhode Island.*

Whelen-Knapp, Christine M., *Adjunct Instructor of Nursing, 1991. M.S., 1975, Boston University.*

White, Deborah L., *Adjunct Instructor of Nursing, 1996. M.S., 1986, University of Pennsylvania.*

White, William Taylor, *Adjunct Assistant Professor of Nursing, 1993. M.S., 1983, University of Rhode Island.*

★Whitlatch, Robert B., *Adjunct Professor of Oceanography, 2005. Ph.D., 1976, University of Chicago.*

Wiberg, Donna J., *Adjunct Assistant Professor of Nursing, 1988, Pharmacy Practice, 1993. M.S.N., 1980, University of Rhode Island.*

★Wiener, Judith, *Adjunct Professor of Psychology 2003. Ph.D., 1978, University of Michigan.*

★Wigand, Cathleen, *Adjunct Professor of Oceanography, 2005. Ph.D., 1994, University of Maryland.*

Wild, Eugenia, *Adjunct Assistant Professor of Women's Studies, 1990. M.A., 1983, University of Rhode Island.*

Wilk, Jacqueline B., *Adjunct Assistant Professor of Psychology, 1988. Ph.D., 1983, University of Rhode Island.*

Williams, David O., *Adjunct Assistant Professor of Biomedical Engineering, 1977. M.D., 1969, Hahnemann Medical College.*

Wilson, Christine M., *Adjunct Assistant Professor of Human Development and Family Studies, 1997. M.S., 1990, Indiana State University.*

★Winsor, David S., *Adjunct Assistant Professor of Community Planning and Area Development, 1985. M.C.P., 1980, University of Rhode Island.*

Winthrop, Elizabeth F., *Adjunct Associate Professor of Food Science and Nutrition, 1994. M.S., 1983, Tufts University.*

Wolinski, Mary E., *Adjunct Assistant Professor of Music, 1992. Ph.D., 1988, Brandeis University.*

Womack, Julie Anne, *Adjunct Assistant Professor of Nursing*, 2000. M.S.N., 1994, Yale University.

Won, Si Yeon, *Adjunct Assistant Professor of Women's Studies*, 2004. A.B.D., 2004, Seoul National University.

★Wood, David H., *Adjunct Associate Professor of Mathematics*, 1988. Ph.D., 1972, University of Rhode Island.

Wood, Sandra G., *Adjunct Assistant Professor of Nursing*, 2001. M.S., 1989, University of Pennsylvania.

★Wright, Thomas E., *Adjunct Professor of Civil and Environmental Engineering*, 1983. M.S.E., 1975, West Virginia University.

Wriston, Sara, *Adjunct Instructor of Nursing*, 1993. M.S., 1980, University of Pennsylvania.

Wyman, Cynthia M., *Adjunct Assistant Professor of Pharmacy Practice*, 1992. M.B.A., 1986, Bryant College.

★Yen, Shirley, *Adjunct Assistant Professor of Psychology*, 2002. Ph.D., 1998, Duke University.

Yoon, Mirang, *Adjunct Professor of Physics*, 2007. Ph.D., 1998, Massachusetts Institute of Technology.

Yorks, Kathleen C., *Adjunct Instructor of Nursing*, 2005. M.A., 1996, University of Rhode Island.

Young, John R., *Adjunct Associate Professor of Human Science and Services*, 2003. B.A., 1972, Clark University.

Zakewicz, Helen, *Adjunct Assistant Professor of Nursing*, 1998. M.S., 1984, University of Illinois.

Zannieri, Christina L., *Adjunct Instructor of Nursing*, 2001. M.S., 1997, Boston University.

Zartler, Ann S., *Adjunct Assistant Professor of Psychology*, 1986. Ph.D., 1978, University of Rhode Island.

Zhang, Cunxian, *Adjunct Assistant Professor of Clinical Laboratory Science*, 2004. M.D., 1983, Shanxi Medical University.

Zhang, Shunli, *Adjunct Assistant Professor of Clinical Laboratory Science*, 2004. M.D., 1982, Shandong Medical University.

Zorabedian, Thomas R., *Adjunct Assistant Professor of Communication Studies*, 1998. Ed.D., 1991, Boston University.

ZuWallack, Alicia R., *Adjunct Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 2000, University of Rhode Island.

**Clinical Appointments**

★Denotes graduate faculty

Audette, Jennifer, *Clinical Assistant Professor of Physical Therapy*, 2003. M.S., 1992, Boston University.

Bourque, Melissa D., *Clinical Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 1998, Butler University.

Bratberg, Jeffrey P., *Clinical Assistant Professor of Pharmacy Practice*, 2002. Pharm.D., 2000, North Dakota State University.

Buco, Andria M., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2007. Pharm.D., 2002, University of Rhode Island.

★Carley, Rebecca, *Assistant Professor of Nursing*, 1991, 1990. M.S., 1982, Boston University.

Charpentier, Margaret, *Clinical Assistant Professor of Pharmacy Practice*, 2003. Pharm.D., 1993, University of Rhode Island.

Cohen, Lisa B., *Clinical Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 1996, University of Rhode Island.

Congdon, Karen S., R.N., E.M.T., *Clinical Coordinator of Cardiac Rehabilitation*, 1986. M.S., 1986, University of Rhode Island.

Connors, Elizabeth C., *Coordinator of the Speech and Hearing Center and Clinical Assistant Professor of Communicative Disorders*, 1998, 1986. M.A., 1981, Northern Michigan University.

★Coppa, Denise, *Clinical Associate Professor of Nursing*, 2003, 1985. M.S., 1979, University of Colorado.

Cowles, Brian J., *Clinical Assistant Professor of Pharmacy Practice*, 2004. Pharm. D., 2001, Philadelphia College of Pharmacy.

Dehner, Kevin, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2007. M.B.A., 2001, University of Rhode Island.

Erickson-Owens, Deborah, *Assistant Clinical Professor of Nursing*, 1998. M.S., 1988, University of Utah.

Evans, Marylee, R.N., *Clinical Assistant Professor of Nursing*, 1974, 1971. M.S., 1974, University of Rhode Island.

Feret, Brett M., *Clinical Associate of Pharmacy Practice*, 2007, 2001. Pharm.D., 1998, University of Rhode Island.

Faoogi, Altaf, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2007. Pharm.D., 2002, University of Rhode Island.

Gerzhevitz, Diane R., *Clinical Assistant Professor of Nursing*, 1994. M.S., 1987, University of Rhode Island.

Gracia, Rafael, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2006. M.D., 1983, University of Puerto Rico School of Medicine.

Guerin, Joshua R., *Clinical Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 2004, University of Rhode Island.

Guthrie, James R., *Clinical Professor of Health Sciences*, 1977. M.D., 1948, New York University College of Medicine.

Haggerty, Margaret R., R.N., *Clinical Assistant Professor of Nursing*, 1975, 1973. M.S., 1972, Boston University; Certificate, Nurse Practitioner, 1979, University of Rhode Island.

Hulme, Janice, *Clinical Assistant Professor of Physical Therapy*, 1999. D.P.T., 1999, University of St. Augustine.

Leone, Marion T., *Clinical Instructor of Respiratory Therapy*, 1978. R.N., 1959, Cambridge City Hospital.

Lin, Sonia, *Clinical Associate Professor of Pharmacy Practice*, 2006, 2000. Pharm.D., 1998, University of Colorado Health Sciences Center, School of Pharmacy.

★MacDonnell, Celia P., *Clinical Associate Professor of Pharmacy Practice*, 2007, 2003. Pharm.D., 2000, University of Rhode Island.

Mako, Chloe, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2006. Pharm.D., 2005, University of Rhode Island.

Martins, Diane C., R.N., *Clinical Assistant Professor of Nursing*, 1985, 1981. M.Ed., 1981, Teachers College, Columbia University.

Mastriani, Raymond A., *Clinical Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 2003, University of Rhode Island.

Matson, Kelly L., *Clinical Assistant Professor of Pharmacy Practice*, 2002. Pharm.D., 2001, Purdue University.

McLinden, John P., *Clinical Assistant Professor of Physical Therapy*, 1996. M.S., 1993, University of Rhode Island.

Mello, Kerry, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2007. Pharm.D., 2000, University of Rhode Island.

★Mercer, Judith, *Clinical Professor of Nursing*, 2005, 1998. D.N.Sc., 1989, Catholic University of America.

Mersfelder, Tracey L., *Clinical Assistant Professor of Pharmacy Practice*, 2004. Pharm.D., 1997, University of Cincinnati.

Orr, K. Kelly, *Clinical Assistant Professor of Pharmacy Practice*, 2002. Pharm.D., 2001, University of Rhode Island.

Oyer, Calvin, *Clinical Professor of Clinical Laboratory Science*, 1997. M.D. 1952, Indiana University.

Palm, Mary Louise, *Clinical Associate Professor of Nursing*, 2006, 1982. M.S., 1975, University of Rhode Island.

Palmer, Michelle Gemma, *Clinical Instructor of Nursing*, 2006. M.S., 1998, Case Western Reserve University.

★Paquette, Gregory E., *Clinical Professor of Clinical Laboratory Science*, 2005, 1995. Ph.D., 1992, University of Rhode Island.

Pawasauskas, Jayne E., *Clinical Associate Professor of Pharmacy Practice*, 2005, 1999. Pharm.D., 1998, University of Rhode Island.

Pechie, Angel S., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2006. Pharm. D., 2001, University of Rhode Island.

Pires, Leslie, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2006. Pharm. D., 2000, University of Rhode Island.

Roberts, Martha J., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2007. Pharm.D., 1999, University of Rhode Island.

Robinson, Deirdre E., *Clinical Assistant Professor of Physical Therapy*, 1995. M.S., 1975, Long Island University; M.S., 1989, Northeastern University.

Ruggieri-Jones, Celeste, *Clinical Assistant Professor of Physical Therapy*, 1997. M.S., 1994, University of Rhode Island.

Schwartz, Joanna, *Clinical Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 2002, Drake University.

Smokler, Herbert J., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2006. M.D., 1959, State University of New York, College of Medicine.

Stapley, Todd, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2006. D.O., 1997, Philadelphia College of Osteopathic Medicine.

Taveira, Tracey, *Clinical Associate Professor of Pharmacy Practice*, 2007, 2001. Pharm.D., 2000, University of Rhode Island.

Theodore, Geraldine L., *Clinical Assistant Professor of Communicative Disorders*, 1998. M.S., 1987, University of Rhode Island.

Tortora, Monica, *Clinical Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 2002, University of Rhode Island.

Valencia, Patricia R., *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2007. Pharm.D., 2002, University of Rhode Island.

VanHaaren, Anne, *Adjunct Clinical Assistant Professor of Pharmacy Practice*, 2005. Pharm.D., 2000, University of Rhode Island.

Ward, Kristina E., *Clinical Assistant Professor of Pharmacy Practice*, 2004. Pharm.D., 1996, University of Pittsburgh.

### Research Appointments

★Denotes graduate faculty

† Denotes professors in residence (graduate faculty able to serve as major professors)

Babolian, Robert, *Adjunct Research Professor of Chemical Engineering*, 1993. Ph.D., 1964, Rensselaer Polytechnic Institute.

Buckley, Francine C., *Adjunct Associate Research Professor of Natural Resources Science*, 1995, 1993. M.S., 1966, Cornell University.

★Buckley, P.A., *Adjunct Research Professor of Natural Resources Science and National Park Service Research Professor of Ecology*, 1990. Ph.D., 1966, Cornell University.

Cioffi, Eugene A., *Assistant Research Professor of Chemistry*, 1995. Ph.D., 1985, University of Connecticut.

Crisman, Everett A., *Research Professor of Chemical Engineering*, 2006, 1991. Ph.D., 1984, Brown University.

DeRagon, William R., *Adjunct Assistant Research Wildlife Biologist*, 1991. M.S., 1988, University of Rhode Island.

Gould, Lisa Lofland, *Adjunct Research Scientist*, 1998. M.S., 1972, University of Rhode Island.

Gow, Arthur S., *Adjunct Research Professor of Chemical Engineering*, 1997. Ph.D., 1991, Pennsylvania State University.

★Hill, Robert B., *Research Professor of Biological Sciences*, 2002. Ph.D., 1957, Harvard University.

Hutchinson, Mary F., *Adjunct Research Scientist*, 1995. M.S., 1990, University of Rhode Island.

Jenkins, Bethany D., *Research Assistant Professor of Cell and Molecular Biology*, 2005. Ph.D., 2000, University of Oregon.

★Jiang, Zhongchun, *Assistant Research Professor of Plant Sciences*, 2001. Ph.D., 1998, University of Rhode Island.

★Johnston, Robert J., *Assistant Research Professor of Environmental and Natural Resource Economics*, 1999. Ph.D., 1996, University of Rhode Island.

Kajiji, Nina, *Associate Research Professor of Education*, 2000. Ph.D., 2001, University of Rhode Island.

★Kellogg, Dorothy Q.N., *Adjunct Assistant Research Hydrologist*, 1995. M.S., 1993, University of Rhode Island.

★Kim, Chong S., *Adjunct Research Professor of History*, 1998. Ph.D., 1965, University of Washington.

Li, Jie-Fang, *Adjunct Assistant Research Professor of Physics*, 1999. Ph.D., 1992, Pennsylvania State University.

★Maranda, Lucie, *Assistant Research Professor of Biomedical Sciences and Environmental Health*, 1990. Ph.D., 1987, University of Rhode Island.

★Marcoux, Rita, *Research Assistant Professor of Pharmacy Practice*, 2005, 1990. M.B.A., 1987, University of Rhode Island.

Park, Eugene, *Associate Research Professor of Chemical Engineering*, 2001, 1994. Ph.D., 1993, University of Rhode Island.

Pockalny, Robert A., *Adjunct Associate Marine Research Scientist*, 2003. Ph.D., 1991, University of Rhode Island.

Rodman, Clarke A., *Adjunct Research Professor of Mechanical Engineering and Applied Mechanics*, 1991. A.B., 1946, Harvard University.

Rynearson, Tatiana A., *Assistant Research Professor of Oceanography*, 2005. Ph.D., 2003, University of Washington.

★Smayda, Theodore John, *Research Professor of Oceanography and Botany*, 1970, 1959. Dr.Philos., 1967, University of Oslo, Sweden.

Teftt, Brian C., *Adjunct Assistant Research Professor of Natural Resources Science*, 1996, 1995. M.S., 1981, University of Maryland/Frostburg State University.

★Uht, Augustus K., *Distinguished Research Professor in Residence of Electrical and Computer Engineering*, 2001. Ph.D., 1985, Carnegie Mellon University.

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# URI TIMELINE



## URI Timeline

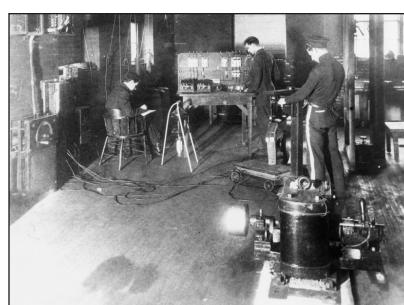
1888	State Agricultural School established	1898	Preparatory school established
	Agricultural Experiment Station	1902	Homer J. Wheeler, Acting President
	established	1903	Kenyon L. Butterfield, President
	Watson farm purchased as site	1904	Extension Department organized
1889	Taft Laboratory	1906	Howard Edwards, President
	John H. Washburn appointed principal	1907	Greenhouse and Horticultural Building
1890	South Hall	1908	Master's degree awarded for first time
1891	College Hall	1909	Preparatory school discontinued
	Ladd Laboratory		The <i>Beacon</i> (student newspaper)
1892	Rhode Island College of Agriculture		established as a monthly
	and Mechanic Arts founded		Rho Iota Kappa (first fraternity)
	May 19	1910	By charter amendment, name
	John H. Washburn, President		changed to Rhode Island State
1894	First class graduated		College
	Alumni Association formed	1912	Theta Chi (first national fraternity)
1895	College Hall burned and rebuilt as	1913	First fraternity house (Beta Phi)
	Davis Hall		Ranger Hall
1897	Lippitt Hall		Chapter of Phi Kappa Phi, national
	First <i>Grist</i> yearbook published		honor society
		1918	Academic work suspended April 28
			Student Army Training Corps
		1919	Academic work resumed January 2
		1921	Washburn Hall
		1924	Home Management House
		1928	Memorial Gateway
			Bliss Hall
			Edwards Hall
			Rodman Hall
			East Farm acquired
		1930	John Barlow, Acting President
		1931	Raymond G. Bressler, President
			President's House
		1932	Reorganization of college: Schools
			of Engineering, of Science and
			Business, and of Agriculture and
			Home Economics
		1934	Asa Sweet and Edward Sweet lands
			purchased

1936 Narragansett Marine Laboratory  
Animal Husbandry Building  
Eleanor Roosevelt Hall  
Quinn Hall  
Central Heating Plant  
Peckham farm purchased  
1937 Green Hall  
1938 Meade Field  
1939 Board of Trustees of State Colleges created  
1940 John Barlow, Acting President  
1941 Carl R. Woodward, President  
1942 War-accelerated program with summer term initiated  
Reorganization of School of Science and Business into separate schools of Science and of Business Administration  
Engineering Experiment Station established  
Industrial Extension Division established



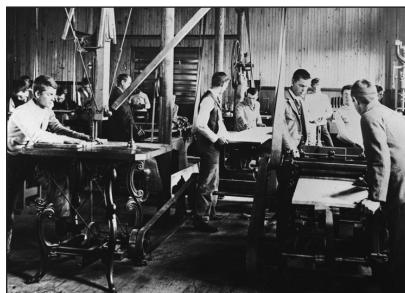
1943 Army Specialized Training Unit assigned to college  
1944 Second Peckham farm purchased  
Industrial Extension Division replaced by Division of General College Extension  
War-accelerated program ended in September  
1945 Degree program in nursing established  
Sherman farm acquired  
1946 Quonset hut colony erected as emergency housing project  
School of Home Economics established  
1948 School of Arts and Sciences established  
Bachelor of Arts degree authorized by Board of Trustees  
1949 Bachelor of Arts degree awarded for first time at June commencement  
1950 Butterfield and Bressler Halls  
1951 Name changed to University of Rhode Island by act of General Assembly  
1952 Pastore Chemical Laboratory

1953 Chapter of Sigma Xi, national scientific honor society  
Frank W. Keaney Gymnasium  
Laboratories for Scientific Criminal Investigation established  
1954 Rhode Island Memorial Union  
1957 College of Pharmacy established  
URI Foundation established  
1958 Francis H. Horn, President  
Degree of Doctor of Philosophy authorized by Board of Trustees  
Child Development Center  
Hutchinson, Peck, and Adams Residence Halls  
Hope Dining Hall  
Woodward Hall  
Administration Building  
Computer Laboratory established  
Potter Infirmary  
Wales and Kelley Halls  
1960 Fish Oceanographic Laboratory  
Independence Hall  
Davis Hall and East Hall remodeled  
Bureau of Government Research established  
Faculty Senate established  
1961 Graduate School of Oceanography  
Tucker, Merrow, and Browning Halls  
Gilbreth Hall  
1962 Crawford Hall  
W. Alton Jones Campus acquired  
Research ship *Trident* commissioned  
1963 Tyler Hall  
Graduate Library School established  
Weldin and Barlow Halls  
1964 Fogarty Health Science Building  
Watson House restored  
1965 Addition to the Memorial Union  
University Library  
Law of the Sea Institute established  
Sherman Maintenance Building  
Bachelor of Fine Arts and Bachelor of Music degrees authorized  
Research Center in Business and Economics established  
Water Resources Research Center established



1966 Aldrich, Burnside, Coddington, Dorr, Ellery, and Hopkins Halls, and Roger Williams Center  
Justin S. Morrill Science Building  
Fine Arts Center (Phase I)  
Institute of Environmental Biology established  
1967 Ballentine Hall  
F. Don James, Acting President  
1968 Kelley Hall Research Annex  
Pell Marine Science Library  
Horn Laboratory  
First Sea Grant received  
Werner A. Baum, President  
New England Marine Resources Information Program established  
1969 Home Management Center  
Curriculum Research and Development Center established  
Heathman Hall  
Faculty Center  
International Center for Marine Resource Development established  
1970 Fayerweather Hall  
Gorham Hall  
Consortium for the Development of Technology established  
Marine Advisory Service established  
1971 Tootell Physical Education Center  
Fine Arts Center (Phase II)  
Conference Center, Jones Campus  
Administrative Services Center  
Board of Regents for Education (Education Act of 1969) takes over direction of higher education  
URI named one of first four Sea Grant Colleges and designated National Sea Grant Depository  
1972 Biological Sciences Building  
Chafee Social Science Building  
University College established  
Coastal Resources Center established  
Graduate apartment complex

1973 William R. Ferrante, Acting President  
Research Aquarium  
Science Research and Nature Preserve  
Buildings, Jones Campus  
Community Planning Building  
1974 Frank Newman, President  
Laboratory for the Study of  
Information Science founded  
1975 Addition to the University Library  
1976 Research ship *Endeavor* commissioned  
1977 Bachelor of General Studies  
established  
White Hall  
Chapter of Phi Beta Kappa, national  
liberal arts honor society  
Center for Ocean Management  
Studies established  
Center for Energy Study established  
Regional Coastal Information Center  
established  
1978 College of Human Science and  
Services succeeds College of  
Home Economics  
Norman D. Watkins Laboratory



1979 Information Center  
1980 Institute for Human Science and  
Services established  
Robotics Research Center  
1981 Center for Atmospheric Chemistry  
established  
Division of University Extension name  
changed to College of Continuing  
Education  
Board of Governors for Higher  
Education established by act of  
General Assembly  
1983 Marine Resources Building  
Small Business Development Center  
established  
Edward D. Eddy, President  
1984 Labor Research Center established  
Food Science and Nutrition Research  
Center

1985 Addition to Pastore Chemical  
Laboratory  
Applied Engineering Laboratory  
1986 Anatomy Laboratory  
Biotechnology Center established  
Division of Marine Resources name  
changed to Office of Marine  
Programs  
1988 Institute for International Business  
established  
Bachelor of Landscape Architecture  
(B.L.A.) established  
1989 Fisheries and Marine Technology  
Building  
Pacific-Basin Capital Markets Research  
Center established  
Research Institute for  
Telecommunications and  
Information Marketing established  
1990 W. Alton Jones Campus Environmental  
Education Center designated a  
National Center for Environmental  
Education  
1991 Robert L. Carothers, President  
Mackal Field House  
Library addition  
Social Sciences Research Center  
Engineering Building and addition to  
Kirk Laboratory  
Atmospheric Chemistry Center,  
Narragansett Bay Campus  
1992 URI Centennial Celebration  
New Sailing Pavilion, Point Judith  
Pond  
Renovation/addition to Memorial  
Union  
Restructuring of Keaney Gymnasium  
Sycamore Residential and Conference  
Lodge, W. Alton Jones Campus  
1993 Dining Services Distribution Center  
Century Walk installed on the  
Quadrangle  
1995 URI designated an Urban Grant  
Institution  
1996 College of Continuing Education's  
Shepard Building restored  
Coastal Institute, Narragansett Bay  
Campus



1998 New Multicultural Center  
CCE renamed the Alan Shawn  
Feinstein College of Continuing  
Education  
College of Resource Development  
renamed the College of the  
Environment and Life Sciences  
Ocean Technology Center opens  
1999 IEP House opens  
Vietnam War Memorial dedicated  
Ann Gall Durbin Aquarium Building  
dedicated  
2001 Coastal Institute, Kingston Campus  
Schmidt Labor Research Center named  
2002 URI Foundation Building  
Thomas M. Ryan Center  
Niles Farmstead Cemetery dedicated  
Bradford R. Boss Ice Arena  
2003 Ballantine Hall Renovation  
Green Hall Restoration  
Newman Hall dedicated  
Biomedical Research Infrastructure  
Network (BRIN) Laboratory opens  
2005 URI Alumni Center  
2006 Independence Hall Renovation  
Meade Field Improvements  
Emergency Medical Services building  
Central Warehouse addition  
2007 Garrahy, Wiley and Eddy Halls  
dedicated  
Hope Commons Dining Hall  
IEP House II opens



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# University of Rhode Island

## LOAN FUNDS, SCHOLARSHIPS, AND AWARDS

### A supplement to the 2007–2008 University of Rhode Island Catalog

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UNIVERSITY OF  
Rhode Island

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9/18/07 ADM2 Produced by the URI Publications Office, Division of University Advancement. Photos by Joe Giblin and Nora Lewis.  
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# LOAN FUNDS, SCHOLARSHIPS, AND AWARDS



The following are privately contributed loan and scholarship funds. For federal programs and general student aid information, see the Enrollment Services section of the URI Catalog.

## Loan Funds, Scholarships, and Awards

### LOAN FUNDS

Short-term loans of up to \$200 are available to full-time students who can demonstrate a means of repayment. These are interest-free loans that may be used only for education-related expenses and must be repaid within 90 days.

Short-term loan funds have been contributed by private donors. In addition to an unrestricted fund for undergraduates, loans are available to graduate and international students.

Included among the many donors to the Short-Term Loan Fund are: Leroy F. Burroughs, Dean Mason Campbell Memorial, Norman M. Fain, Barney M. Goldberg, Robert W. Krovitz and Bella S. Krovitz Memorial, Ernest T. Michie Education Loan Fund, Patrons Association, Providence Engineering Society, Providence Wholesale Drug Company, University of Rhode Island Alumni Association, John H. Washburn Memorial, and Louisa White Fund. A separate

short-term loan fund has been established in the name of Peter M. and Mildred J. Galanti.

Also, individual loan funds have been established in the name of the late Dr. J. Louis Jack in memory of his brother, Dr. Gabriel J. Jack, and his wife, Gladys E. Jack. These funds are available to any qualified URI students with financial need and good scholastic standing. Interest rate is one-half of prevailing rate.

Applications for short-term loans are available at Student Financial Assistance and Employment Services.

### SCHOLARSHIPS

If not otherwise stated in the following descriptions, selection of recipient is made by Student Financial Assistance and Employment Services.

#### Any College of the University

**George and Violet Ajootian Scholarship:** Income from endowment for a scholarship awarded annually to students with financial need.

**Governor and Mrs. Lincoln Almond Scholarship:** Income from endowment for a scholarship awarded annually to a Rhode Island resident based on financial need.

**\*American Screw Company Foundation Scholarship:** Income from endowment awarded annually to worthy undergraduate or graduate students, with preference to children of former employees of the American Screw Company.

**Anthony Athletic Association Scholarship:** Income from endowment awarded annually with preference given to any high school graduate who is/continues to be a Coventry resident.

**George E. Arnold '30 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**Aurora Civic Association Scholarship:** Income from endowment to support the University's general scholarship fund.

**\*John F. Bannon Scholarship:** Income from endowment awarded to deserving undergraduate or graduate students on the basis of financial need.

**William and Jean Barber:** Income from endowment awarded annually for a scholarship to undergraduate students from Newport County, RI who express interest in working in youth development and who have financial need.

**Amy Jane Bare Scholarship:** Income from endowment awarded annually for a scholarship for deserving students with preference to female residents of Newport County, RI.

**\*Ann and Albert Barker Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a married student currently enrolled at the University with a GPA of 2.5 or better.

**Carlton and Olive Barton Scholarship:** Income from endowment awarded annually to an undergraduate student with an above-average academic record and genuine financial need.

**George A. Bates Memorial Scholarship:** Income from endowment awarded annually to an undergraduate student with genuine financial need and good academic performance.

**John M. Baxter Scholarship:** Income from endowment for a scholarship in men's basketball or men's track awarded annually to a student competing in one of these sports. Recipient selected by the director of athletics in consultation with basketball and track coaches. The funds were donated by the late John M. Baxter '52, Sun Life Assurance Company of Canada, and numerous others.

**Walter Beaupre Memorial Scholarship:** Income from endowment to be used at the discretion of the swimming coach with approval of the URI athletic director.

**Ralph S. Belmont, M.D., '31 Scholarship:** Income from endowment available to undergraduate students with financial need. First consideration given to graduates of Rogers High School in Newport.

**Benson Scholarship:** Income from endowment for a scholarship awarded annually to an African-American student who is well-rounded academically and who demonstrates commitment to community service. Recipient will be selected by Enrollment Services.

**Artacky and Elesie Berberian Scholarship:** Income from endowment awarded annually to students with financial need, with preference to Armenian students.

**William Bingham Foundation Undergraduate Scholarship:** Income from endowment for scholarships awarded annually to supplement student financial aid, in instances where other available scholarship support is insufficient to meet student needs.

**Hank Blay Memorial Scholarship:** Income from endowment awarded annually to a student employed by, or whose parent is employed by, the Metropolitan Life Insurance Company, on the basis of academic performance and genuine financial need.

**Alice Bliss Memorial Scholarship:** Income from endowment awarded to students with financial need.

**Patrick K. Bolger Scholarship:** Income from endowment for a scholarship awarded annually to a student in the Special Programs for Talent Development program. Preference given to graduates of the community preparatory school program in South Providence. Selection made by Talent Development program.

**Nathalie E. Briggs:** Income from endowment for a scholarship awarded annually, with preference to a member of Chi Omega Sorority, based on financial need.

**Howard S. and Elsa M. Brightman Scholarship:** Income from endowment for a scholarship awarded annually to undergraduate students in good academic standing with genuine financial need who are graduates of Scituate High School.

**Brittingham/Pezzullo Scholarship:** Fund established to honor Mrs. Eva Stuebe, Tom Pezzullo Jr., and Ines Rose Longo. Income from endowment for a scholarship awarded annually to an incoming, first-year student who is a Rhode Island resident and a first-generation college attendee with demonstrated financial need.

**Gustin Buonaiuto Family Endowment:** Income from endowment added to the Harold Kopp Scholarship fund awarded annually to a football player. Selection made by the football coach and the director of athletics.

**Leroy F. Burroughs Memorial Scholarship:** Income from endowment awarded annually to a student with financial need.

**Robert Stetson Butler and Charlene Klatt Butler Scholarship:** Income from endowment for a scholarship(s) awarded annually to a resident(s) of West Greenwich who is a graduate of Exeter-West Greenwich High School on the basis of financial need with preference to an incoming freshman.

**Ernie Calverley Scholarship:** Income from endowment for a scholarship in athletics with preference to men's basketball. If there is no men's basketball player with financial need, then the scholarship will be made available to a male or female student who is academically qualified (more than a 2.00 grade point average) and who is participating in a varsity sport that is not fully funded by the Athletics Department. Recipients selected by the director of athletics.

**E. Doris Carney Memorial Scholarship:** Income from endowment awarded annually to the member of Phi Sigma Kappa having the highest grade point average. Phi Sigma National will match the award. Recipient selected by Student Financial Assistance and Employment Services and Phi Sigma Kappa.

**Carothers Centennial Scholarship:** Income from endowment awarded annually through the Centennial Scholarship Program.

**Robert L. Carothers and Patricia Ruane Scholarship:** Income from endowment for scholarships to minority students.

**Castellucci and Galli, Inc. Scholarship:** Income from endowment awarded annually to a student with financial need.

**Castrovilli Family Athletic Scholarship:** Income from endowment to support URI basketball. Recipient selected by the Athletics Department.

**Hazel Ruth Cavnor Memorial Scholarship:** Income from endowment awarded annually to students on the basis of financial need and the student's application in studies.

**Chester Cekala '54 and Eileen Cekala Scholarship:** The endowment shall be used to provide a scholarship to a freshman student from North Attleboro, Massachusetts, based on academic achievement. If no students from North Attleboro are admitted to the University, students from the greater Attleboro area will be considered.

**Centreville Savings Bank Scholarship:** Income from endowment for scholarships to undergraduate students who live in the Centreville Bank service area on the basis of merit (3.00 minimum average) and financial need.

**Harry C. Chandler '24 Memorial Scholarship:** Income from endowment awarded to students with financial need.

**Chi Omega '60s Scholarship:** Income from endowment for a scholarship awarded annually. Preference to a Chi Omega or to a son or daughter of a Chi Omega who is in good academic standing and displays leadership in the community. Recipient will be chosen by a Chi Omega committee led by Roberta Anderson.

**Citizens Bank Women's Athletic Scholarship:** Income from endowment awarded annually to woman who is loyal and ethical, shows leadership and discipline, and is a Rhode Island high school graduate with outstanding athletic talent who maintains a 2.50 grade point average. Recipient may qualify for the scholarship in future years if she continues to meet the criteria. Selection made by a committee comprising the senior women's

athletics administrator at URI, a Citizens Bank representative, the director of athletics, and the director of student financial aid.

**\*George P. and Vera J. Clark Memorial Scholarship:** Income from endowment awarded annually to needy and worthy students with first preference to graduates of Chariho High School.

**Philip H. Clark Scholarship:** Income from endowment awarded to deserving undergraduates.

**Theodore S. and Elizabeth S. Clarke Endowment:** Income from endowment for athletic scholarships. Selection made by the athletic director.

**Barbara Marie Colavecchio Memorial Scholarship:** Income from endowment for a scholarship awarded annually on the basis of genuine financial need and academic achievement. First preference to Rhode Island high school graduates.

**Commercial Management Service, Inc., Endowment:** Income from endowment for scholarships awarded annually to students demonstrating need with satisfactory academic standing.

**Kenneth L. and Bertha T. Coombs 4-H Scholarship:** Income from endowment awarded annually based on a combination of genuine financial need and academic performance. First preference to an entering student currently or formerly a 4-H member who is a resident of Rhode Island. Application to include a summary of student's 4-H experience.

**Jennifer Corbett Memorial Scholarship:** Income from endowment for a scholarship awarded annually to the child of a firefighter, police officer, and/or enlisted military personnel.

**Corner Kick Scholarship Fund:** Scholarship awarded to a male soccer player recommended by the head coach of the URI men's soccer team and the director of athletics, as approved by Student Financial Assistance and Employment Services.

**Douglas Cote and Jennifer Cote Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate student from a low-income family with preference to African-American or Hispanic students.

**Edward J. Cox Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a male or female athlete who participates in any one of the University's NCAA athletic programs and who maintains a minimum G.P.A. of 3.0.

**Cranston Print Works Company**

**Scholarships:** Awarded to dependent children of employees. Available to qualified applicants for a maximum of two years at up to \$1,500 annually. Applications available at the office of the director of human resources, Cranston Print Works, Cranston, R.I.

**Dr. and Mrs. Gene A. Croce Scholastic**

**Scholarship:** Income from endowment awarded annually for a scholarship for deserving students of Italo-American descent who are striving diligently toward a degree in a pre-medical concentration.

**A.T. Cross Company Scholarship:** Income from endowment awarded to deserving students with financial need.

**Dr. Donald and Amelia Davidson Scholarship:** Income from endowment awarded annually to students in good academic standing with genuine financial need.

**Henry E. Davis Memorial Scholarship:** Income from endowment for scholarships to deserving students.

**Frances B. DeFrance Memorial Scholarship:** Income from endowment awarded annually to a woman student who is a Rhode Island resident on the basis of scholastic ability and financial need. Contributed by Chapter B, P.E.O., Kingston, R.I., in memory of one of its founders.

**Anna and Gregory Demetrikas Fund:**

Income from endowment for scholarships awarded annually to Rhode Island students enrolled in the Feinstein College of Continuing Education who are majoring in mathematics or a related area on the basis of financial need and academic merit. Recipients selected by the Alan Shawn Feinstein College of Continuing Education Scholarship Committee.

**Ronald Denelle Endowment:** Income from endowment for a scholarship awarded annually to students in good standing at URI. Preference to South County residents.

**Paul DePace Scholarship Endowment:**

Income from endowment, established by PARI in honor of Paul DePace, director of URI Capital Projects, for scholarships awarded to students who are permanently disabled.

**Colonel Joseph DeRita Football Scholarship:** Income from endowment awarded annually to a football player. Recipient selected by the Athletic Department.

**Leo F. DiMaio Jr. Scholarship:** Income from endowment for scholarships for students in the Talent Development program with met financial need who exemplify the Talent Development philosophy of hard work, program commitment, and academic achievement. Selection made by the Talent Development program.

**Dr. Joseph D. DiMase Scholarship in Pre-Med Studies:**

Income from endowment for a scholarship awarded annually to a third- or fourth-year student with financial need who is pursuing any pre-med major.

**Henry and Jane Donnell Scholarship:** Income from endowment for a scholarship awarded annually to a student with financial need. Recipient chosen by the Student Financial Aid Office.

**Dubee Family Scholarship Fund:** Income from endowment awarded annually to an undergraduate student, preferably African-American, with a good academic record and genuine financial need.

**Daniel R. Dye Memorial Scholarship:** Income from endowment awarded annually to a graduate of East Providence High School with financial need.

**Frances R. and James W. Eastwood '37 Scholarship:** Income from endowment awarded annually to a deserving student with demonstrated academic promise. Selection made by the Admissions Office.

**\*Dr. Edward and Polly Eddy Scholarship:** Income from endowment for a scholarship awarded to an international student. Scholarship was initiated in honor of Dr. and Mrs. Eddy's retirement from URI.

**Michael D. Fascitelli Scholarship:** Income from endowment for a scholarship awarded annually to a student from North Providence High School who has demonstrated academic ability and athletic ability and who has documented financial need.

**Lloyd C. and Marilyn W. England Scholarship:** Income from endowment for scholarships to be awarded annually to students in good academic standing who have financial need. First preference to students from Rhode Island.

**James J. Federico Sr. '35 and James J. Federico Jr. Scholarship:** Endowment established as a permanent memorial in honor of James J. Federico and in recognition of his outstanding contributions, guidance, and example to youths at all levels of education and athletic participation. Income from endowment provides a scholarship awarded annually to a student-athlete graduating from Westerly High School.

**Alan Shawn Feinstein Leadership Scholarship:** Income from endowment awarded annually for a scholarship to entering freshmen who are Feinstein Jr. Scholars. The same student may receive the scholarship for four years provided that the student is full-time and participates in a small community service project.

**Ferland Corporation Scholarship:** Income from endowment awarded annually to students with financial need. Preference given to employees or children of employees of the Ferland Corporation, citizens of Pawtucket, and graduates of St. Raphael's Academy.

**Frank and Arthur Fiorenzano Scholarship:** Income from endowment awarded annually on the basis of financial need, with consideration given to academic excellence. Preference given to Rhode Island residents, or F.A.F., Inc. employees and their children.

**Michael J. Fitzgerald Scholarship:** Income from endowment for a scholarship(s) in the amount of \$500 awarded annually to a sophomore, junior, or senior member of the Lambda Chi Alpha fraternity on the basis of financial need and involvement in community service, with preference given to a student wishing to work in a human service vocation.

**William N. '17 and Anita Fritsch Memorial Scholarship:** Income from endowment awarded to a student with financial need.

**Thomas A. Gamon Memorial Scholarship:** Income from endowment for a scholarship awarded annually to students from Aquidneck Island.

**Beatrice and Tom Garrick Sr. Scholarship:** Income from endowment for a scholarship awarded annually to a minority student with financial need. The fund was established with proceeds from the 1988 NCAA basketball tournament.

**General Dynamics Electric Boat Division Scholarship:** Income from endowment for scholarships of \$350 awarded, with preference to children of full-time employees of the Quonset Point facility. The students must have financial need and must be studying business, engineering, or the sciences.

**Olive Z. Godfrey Memorial Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need.

**Morton and Ruth Grossman Scholarship:** Income from endowment shared among the College of Nursing, turf research, and general need-based scholarships.

**George Hadfield III Scholarship:** Income from endowment awarded annually primarily to graduates of Tolman High School in Pawtucket.

**Carlisle Hall '15 Scholarship:** Income from endowment awarded to students with financial need, with preference to the Kappa Rho chapter of Phi Gamma Delta fraternity members and ROTC cadets.

**Louis Raymond Hampton '42 Scholarship:** Income from endowment for a scholarship awarded annually on the basis of genuine financial need and academic performance. First preference given to engineering students who are dependent children of Providence Gas Company employees.

**Vasilios S. and Aphrodite Haseotes Scholarship:** Scholarship for an undergraduate student enrolled at URI whose home residence is any one of the New England states. While there is no academic programmatic criteria associated with the scholarship, the awardee must have a 3.00 or above quality point average, as well as having a demonstrated financial need. Students receiving the scholarship may be entering freshmen or upperclassmen. Final scholarship decisions are made by Student Financial Assistance and Employment Services.

**James H. Higgins Memorial Scholarship:** Income from endowment awarded to students with financial need. Gift is from the estate of Mrs. James H. (Ellen F.) Higgins.

**James H. Higgins Jr. Memorial Scholarship:** Income from endowment awarded to students with financial need.

**High School Model Legislature:** Amount of general fee awarded to an incoming freshman who has given an outstanding performance in the Model Legislature. Application must be made for this award. Recipients selected by the program director of the high school.

**Conrad R. Hill Memorial:** Income from endowment for a scholarship awarded annually to a male ice hockey player who is in good academic standing (2.5 minimum grade point average) and making good progress towards graduation.

**Hoder Family Endowment:** Income from endowment added to the Harold Kopp Scholarship fund awarded annually to a football player. Selection made by the football coach and the director of athletics.

**Dr. Percy Hodgson Scholarship:** Income from endowment awarded annually to students with financial need, with preference to students from foreign countries.

**Hope Lodge #25 Masonic Scholarship:** Income from endowment for a scholarship awarded annually to a student who is a member or a close relation to a member of Hope Lodge #25 A.F. & A.M. Wakefield, on the basis of academic achievement and financial need.

**Hopkins Family Scholarship:** Income from endowment for support of Centennial Scholars at the University.

**Fran and Billie Horn International Scholarship:** Income from endowment for a scholarship awarded annually, with special consideration to students from foreign countries, on the basis of academic standing and financial need.

**International Grant:** A limited number of partial out-of-state tuition grants awarded by the Office of International Students and Scholars on the basis of financial need. Grants are not available to first-year students.

**Michael Jones Memorial Scholarship:** Income from endowment awarded annually to an East Greenwich high school student who will attend URI.

**Journal Register Company Journalism Scholarship:** Income from endowment for a scholarship awarded annually to a journalism major with financial need who is a resident of any of the towns in Rhode Island within the ring areas of the *Journal Register's* publications.

**Stephen M. Kaufman Memorial Scholarship:** Income from endowment for a scholarship awarded annually based on financial need.

**A. Livingston Kelley Memorial Scholarship:** Income from endowment, established by the will of A. Livingston Kelley, awarded annually to a worthy student with financial need who is a resident of Rhode Island.

**Sylvia C. and Frederick Kenner '38 Scholarship:** Income from endowment awarded annually to a URI freshman with genuine financial need who graduated from high school with an A- grade average or better.

**Kenyon Piece Dyeworks, Inc., Scholarship:** Income from endowment awarded annually to students with financial need, with preference to employees or children of employees of Kenyon Piece Dyeworks.

**Paul J. Kervick Family Scholarship:** Income from endowment awarded annually to deserving students from middle-income families, with preference to children of employees of Providence Steel and Iron Company with financial need.

**Key Container Corporation Scholarship:** Scholarship of \$4,000 awarded annually to a full-time undergraduate student on the basis of financial need and academic record. First priority to children of Key Container Corporation employees. If no children of employees apply, then award goes to a Rhode Island high school graduate. Recipient must be a Rhode Island resident and U.S. citizen. Scholarship will be continued on to other years if recipient maintains a 2.50 grade point average.

**Chester H. Kirk Scholarship:** Income from endowment awarded annually to children of AMTROL, Inc. employees. Students without financial need will receive \$100; for other children of AMTROL employees, financial need and the amount of award will be determined by Student Financial Assistance and Employment Services.

**Kenneth L. and Marie V. Kirk Endowment:** Income from endowment for a scholarship awarded annually to a student being served by URI's programming for the physically challenged who is in good academic and social standing. First preference to a student from Rhode Island. Recipient selected by Student Financial Assistance and Employment Services in consultation with Disability Services.

**Harry Knowles Memorial Scholarship:** Income from endowment, established by the will of Harry Knowles, awarded annually to students with financial need.

**Irving Kopech Scholarship:** Income from endowment for a scholarship based on financial need.

**Harold Kopp Football Scholarship:** Income from endowment for a scholarship in football awarded annually. Recipients selected by the football coach and the director of athletics. See also: the Hoder Family, Gustin Buonaiuto Family, Pezzelli, John F. Quinn Fifth Quarter Club, and Rose Family endowments.

**June J. and Habib Koussa Scholarship:** Income from endowment for a scholarship awarded to a full-time undergraduate in engineering, business administration, resource development, or physical education with a minimum 2.75 average at URI, or a 3.00 if a freshman, who is a native-born citizen of the United States and demonstrates financial need. Preference to graduates of Central Falls or South Kingstown High School.

**Jack Kraft Endowment for Basketball:** Income from endowment for a scholarship in basketball established in honor of Jack Kraft, URI basketball coach and director of athletic giving, upon his retirement. Selection made by the director of athletics.

**Eleanor Lemaire Women's Athletic Scholarship:** Awarded to female student-athletes in any college. Selection made by the Lemaire Committee.

**Leviton Foundation, Inc., Scholarship:** Income from endowment for scholarships awarded annually to children and grandchildren of employees of American Insulated Wire, Atlas Wire & Cable, Cable Electric Products, Leviton Manufacturing, Rhode Island Insulated Wire, and other affiliated companies. Preference given to applicants who are undergraduates with financial need and high scholastic standing.

**Austin T. Levy Memorial Scholarship:**

Income from endowment awarded annually to students with financial need, with preference to graduates of Burrillville High School.

**Rich Ligi Scholarship:** Award winner must be a full-time NCAA/URI eligible baseball student athlete. It is to be a one-year award which may be awarded to the same person in subsequent years.

**Lions Club of Westerly Scholarship:**

Income from endowment awarded annually to graduates of Westerly High School with financial need, with preference given to upperclassmen.

**\*Little Family Foundation:** Junior Achievement Fellowships for full-time graduate business study. Recipients must have been Junior Achievement participants or advisors. Preference given to Rhode Island residents with two or more years of work experience, chosen by the graduate business faculty. If no Rhode Island residents are eligible, out-of-state students may be chosen.

**Thomas A. Macari Ice Hockey Scholarship:** Income from endowment for a scholarship in ice hockey awarded annually to a student who emulates the positive ideals of Tom Macari. Recipient selected by the hockey coaches and the URI recreational services director.

**Henry H. Mackal Scholarship:** Income from endowment awarded to students with financial need majoring in engineering, mathematics, natural sciences, or physical education.

**Edward E. and Louise E. Madden:** Income from endowment for a scholarship awarded annually to provide assistance to undergraduate students who are the first generation of their immediate family to attend college.

**\*Edward Marth Scholarship:** A \$500 annual grant to a graduate student enrolled in the labor relations and industrial management program. Selection made by the Labor and Industrial Relations Program.

**Mary Matzinger Memorial Scholarship:** Income from endowment awarded annually on the basis of academic excellence.

**Messinger Family Scholarship:** Income from endowment awarded annually to a Rhode Island resident with financial need and at least a B average. The award will be made to an incoming freshman student and continue to the same student for the four years, assuming the criteria are continually met. Selection made by the dean of the College of Engineering.

**Miniat Family Endowment:** Income from endowment for scholarships awarded annually to returning University of Rhode Island undergraduate students who have demonstrated academic excellence and leadership in extracurricular activities.

**Minorities Scholarship Endowment:** Income from endowment awarded annually to a minority student with financial need. Recipient selected by Student Financial Assistance and Employment Services. Funds donated by the URI Alumni Association.

**Moore Company Scholarship:** Awarded annually to students with financial need, with preference to children of employees of the George C. Moore Company in Westerly, Carr-Fulflex, Inc. in Bristol, and Darlington Fabrics in Westerly.

**Richard B. Morrison Memorial Scholarship:** Income from endowment awarded annually to Rhode Island residents with financial need.

**Daniel J. and Blanche R. Murray Family Scholarship:** Income from endowment awarded annually to a student with financial need.

**Carl Myllymaki Memorial Scholarship:** Income from endowment for three equal scholarships to Westerly High School seniors who participate in sports, student government, or scouting. Carl Myllymaki was a URI student who was killed in action in Vietnam.

**Native American Scholarship:** Annual grant awarded to a student with financial need who is a Native American. (Tribal documentation must be provided.)

**Frank Navarro Scholarship:** Scholarship for the tuition of an incoming freshman who is in the top third of his/her high school graduating class and whose SAT scores make him/her eligible for a Centennial Scholarship. The same student may receive the scholarship for four years as long as he/she maintains a grade point average of at least 3.0. The student must be a business major and a Rhode Island resident, with preference to those from Westerly/Chariho. The student must also come from a single-parent home or be the first in his or her family to attend college.

**Nathaniel J. Nazareth Scholarship:** Income from endowment for a scholarship awarded annually to a student who is a Rhode Island resident with financial need and who has a part-time job. Recipient selected by Enrollment Services.

**Keith Nester Scholarship:** Income from endowment awarded annually to a member of a fraternity or a sorority in honor of Keith Nester, who retired after 23 years as director of the Fraternity Managers Association.

**Andrew J. Newman-John W. Chapman Scholarship:**

Income from endowment awarded annually to a worthy male student in need of financial assistance, preferably to a member of the Lambda Chi Alpha fraternity.

**Dorothy M. Noble Awards:** Income from endowment for two \$150 book awards presented each spring to members of the Kappa Rho chapter of Phi Gamma Delta. Selection made by the Kappa Rho chapter.

**North Family Trust:** Annual grant to an entering student from Newport County.

**William E. O'Hara '81 Memorial Crew Scholarship:** Income from endowment for a scholarship awarded annually to a member of URI Crew who demonstrates leadership and academic excellence and who best exemplifies the spirit of URI Crew. Recipient selected by the University's recreational services director.

**Michelle Ohley Endowment:** Income from endowment for a scholarship awarded annually in women's athletics to a female student athlete in a varsity sport that is not fully funded by the Athletic Department. This endowment was established in the memory of Michelle Ohley, who was an avid basketball fan and sports enthusiast.

**Eric L. Osterberg Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student enrolled in Special Programs for Talent Development.

**Palmer Family Scholarship:** Income from endowment awarded annually to an undergraduate student.

**Peltier Family Endowment:** Income from endowment for a scholarship awarded annually to a student with high academic achievements and financial need.

**Petroleum Trust Fund:** Scholarship awarded to a member of the senior class.

**Pezzelli Endowment:** Income from endowment added to the Harold Kopp Scholarship fund awarded annually to a football player. Selection made by the football coach and the director of athletics.

**Edward E. and Ida Fisher Pierce Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need.

**Brinton C. Piez Golf Endowment:** Income from endowment for a scholarship in men's golf awarded annually to a qualified student. Selection made by committee.

**Howard E. Possner, M.D., '37 and Dorothy Babcock Possner '37 Scholarship:** Income from endowment awarded annually to a premed student in good academic standing with genuine financial need.

**Providence Journal-Bulletin Scholarship:**

Scholarship awarded annually with preference given to qualified sons and daughters of employees of the Providence Journal Company and its subsidiaries.

**Col. John Joseph '35 and Mary Drew Prybyla**

**Rhode Island National Guard Scholarship:** Income from endowment awarded annually to students on any URI campus who are members of the R.I. Army or Air Force National Guard. Awards will be made in \$100 or \$500 increments by the Adjutant General of the State of Rhode Island. Applications are available at the Office of the Adjutant General, Armory of Mounted Commands, 1051 North Main St., Providence, RI 02904-5717.

**John F. Quinn Fifth Quarter Club**

**Endowment:** Income from endowment added to the Kopp Scholarship fund awarded annually to a football player. Recipient selected by the football coach and the director of athletics.

**John F. Quinn Memorial Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need.

**A. Robert Rainville Memorial Scholarship:** Income from endowment for scholarships awarded annually to current URI students who are winners of the annual A. Robert Rainville Leadership and Service Awards.

**Ram Club Scholarship:** Income from endowment for support of the general athletic scholarship program. Recipients selected by the Department of Athletics.

**Herbert D. and L. Marcella Randall Scholarship:** Income from endowment for scholarships divided equally between men's crew and men's tennis on the basis of financial need and academic ability.

**Rau Fastener Company Scholarship:** Income from endowment awarded annually to students, with preference to children of Rau Fastener employees.

**Elton Rayack Scholarship:** Scholarship awarded annually to a junior demonstrating financial need and scholastic achievement.

**Louis M. Ream Memorial Scholarship:** Income from endowment awarded annually to students with financial need.

**Mary Ellen Reilly Scholarship:** \$500 awarded annually to a woman student (sophomore or above) on the basis of academic excellence and financial need.

**Richard and Linda J. Rendine Scholarship:** Income from endowment for a scholarship to a student who is a graduate of Pittsfield (Mass.) High School with second preference to a Classical High School (Providence) graduate on the basis of a minimum 3.00 academic average and demonstrated financial need.

**Reserve Officers Training Corps (ROTC)**

**Army Scholarship Program:** Two-, three-, and four-year scholarships are available to outstanding young students who are seeking not only a commission as an Army officer but a path of dynamic career opportunities. Selection is based on applicant's achievement, not financial status. Includes full tuition and fees, and up to \$1,200 for the school year, paid directly to the student. Contact the Department of Military Science.

**\*Jerry M. and Evelyn L. Rhoads Memorial Endowed Scholarship Fund:** Income from endowment for a scholarship awarded annually to one or more full-time undergraduate or graduate students based on academic merit and financial need. Preference will be given to engineering students from Rhode Island high schools.

**Rhode Island Women's Club of Providence**

**Scholarship:** Income from endowment for a scholarship awarded annually to women who are full-time meritorious students at URI. Scholarship restricted to worthy and needy students. Recipients selected from among nominations from the academic deans by the Office of the Provost.

**Mary L. Robinson Scholarship:** Income from endowment, established by the will of Anna D. Robinson in memory of her mother, awarded annually to a worthy and needy female student.

**Rose Family Endowment:** Income from endowment added to the Harold Kopp Scholarship fund awarded annually to a football player. Selection made by the football coach and the director of athletics.

**Samuel and Gertrude J. Rosen Scholarship:** Income from endowment for a scholarship awarded annually to students with financial need.

**N. Edward Rosenhirsch Memorial Scholarship:** Income from endowment awarded annually to students with financial need.

**Dr. Joseph L.C. and Mary P. Ruisi Scholarship:** Awarded to undergraduates who are enrolled full-time on the basis of need and academic merit (a minimum grade point average of 2.5 in core courses). Recipient must be a graduate of Westerly or Chariho Regional High School.

**Sarni Family Endowment:** Income from endowment awarded annually for up to one-half of tuition costs. First preference to needy, qualified first-generation students of at least one Italian parent. Scholarships to be distributed equally among the colleges.

**A.A. Savastano '32 Scholarship:** Income from endowment for a \$500 scholarship in athletics awarded annually to a high school athlete letter winner with financial need. Student Financial Assistance and Employment Services or URI coaches may propose the recipient.

**Joseph J. Scussell '31 Scholarship:** Income from endowment awarded annually on the basis of academic performance and financial need.

**John Shepard II Memorial Scholarship:** Income from endowment for scholarships awarded annually to students in the Alan Shawn Feinstein College of Continuing Education on the basis of both academic record and financial need, with preference given to students with an interest in retailing or a related field. Selection made by the dean of this college and a scholarship committee created for this purpose.

**Barbara K. Simmons Memorial Scholarship:** Income from endowment for a scholarship awarded to a student from Aquidneck Island with genuine financial need and an above-average academic record. Order of preference: a student in animal science, a student working for a B.S. degree in science in the College of Arts and Sciences, a student in the College of Nursing, or a student in the College of the Environment and Life Sciences.

**Joseph S. Sinclair Scholarship:** Income from endowment for a scholarship awarded annually to a student from Rhode Island with financial need and a minimum grade point average of 3.0.

**Aleck Slade Scholarship:** Income from endowment for a scholarship in athletics awarded annually to an incoming freshman or fully matriculated student. Recipient selected by the director of athletics.

**Richard A. and Carolyn Soderberg Endowed Scholarship:** Income from endowment for a scholarship awarded annually on the basis of need to a South Kingstown High School graduate.

**Edwin S. Soforenko Scholarship:** Income from endowment awarded annually to deserving students, with first preference to employees of Insurance Underwriters, Inc., and their families.

**Harold B. Soloveitzik '35 Scholarship:** Income from endowment awarded annually to worthy students with financial need. First preference to students from the South County and Pawcatuck areas.

**Michael Spero '34 Scholarship:** Income from endowment awarded annually to American-born undergraduate students on the basis of financial need and normal progress toward completion of the baccalaureate degree.

**Ann Spruill Endowment:** Income from endowment for a scholarship based on academic excellence.

**Doris Vanderbeek Staats Scholarship:** Income from endowment for a scholarship awarded annually to a Chi Omega, or child or grandchild of a Chi Omega alumna. The recipient of the scholarship should be in good academic standing, display leadership in the community, and have financial need.

**\*Harold Stanzler Endowment:** In memory of Harold Stanzler, income from endowment for a scholarship awarded annually to a student attending the Alan Shawn Feinstein College of Continuing Education with preference to a student majoring in industrial relations.

**Albert Stone Memorial Scholarship:** Income from endowment scholarships awarded annually to students with good academic records and financial need.

**Student Senate Scholarship:** Income from endowment for a scholarship awarded annually to a student working with the Student Senate.

**Student-to-Student Scholarship:** Income from endowment awarded annually to a student with financial need.

**Stan Stutz Memorial Scholarship:** Income from endowment for an athletic scholarship awarded annually to students with financial need, with preference given to residents of Westchester County, N.Y. Selection made by the director of athletics.

**Frederick C. Tanner Memorial Fund:** Several awards available annually to students with financial need, with preference given to sons and daughters of Federal Products Corporation employees.

**Jacob and Baye Temkin Scholarship:** Income from endowment for a scholarship awarded annually based on academic achievement and financial need.

**Maurice and Valerie Tetreault Scholarship for Academic Integrity:** Income from endowment for a scholarship awarded annually to a deserving junior or senior based on academic performance.

**Frederick D. Tootell Memorial Scholarship:** Income from endowment for a scholarship awarded annually to members of the track team on the basis of athletic ability. Selection made by the scholarship committee of the track team.

#### **Cecilia T. Trubiano Memorial Scholarship:**

Awarded to incoming freshman students in the Talent Development program who graduated from the Providence public school system, in recognition of Cecilia Trubiano's commitment and dedication to the children of the Providence public schools. Recipient selected by Talent Development and Student Financial Assistance and Employment Services.

**\*Anna Tucker Scholarship:** Income from endowment for scholarships awarded annually to women athletes on the basis of financial need, membership in a varsity sport, and a minimum 2.5 average. Women with the greatest need who meet the other qualifications should receive the scholarships.

**Francesco and Mariannina Ucci Family Scholarship Endowment:** Income from endowment awarded annually to students who have completed their sophomore year and are majoring in a scientific discipline including, but not limited to, chemistry, engineering, biological or physical science, pharmacy, computer science, or premedical studies; with preference given to graduates of West Warwick High School. This fund was established by Pompelio A. Ucci, Class of 1943.

**University Grant:** The Board of Regents has made available a sum of money to be used for scholarships. While it is expected that in any year the great majority of these scholarships will be awarded to residents of Rhode Island, in certain exceptional cases out-of-state students may qualify.

#### **University of Rhode Island R.O.T.C.**

**"Cramer's Sabers" Battalion Fund:** The endowment shall be used to provide a prize or scholarship to a deserving University of Rhode Island R.O.T.C. program cadet. The key criterion of "deserving" shall be attributes such as leadership potential, spirit of service to country and the Army Officer Corps, and ability to demonstrate overall selfless service to our country.

**URI Alumni Association Presidential Scholarship:** Income from endowment for a \$1,000 award for the senior year to a son or daughter of a URI alumnus(a) who has the highest cumulative grade point average for three consecutive years at URI. In the event of a tie, the award is to be divided. Application to be made through the Alumni Association Office.

**URI Alumni Association Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Alumni Association Scholarship for Children of Alumni:** Six \$500 awards given annually to two sophomores, two juniors, and two seniors who are children of URI alumni. Awards based on highest grade point average for the previous academic year among the pool of applicants in each category. Awards will be given only to those who submit formal application. Selection made by the URI Alumni Association.

**URI Alumni Memorial Scholarship:** Income from endowment for a scholarship based on financial need.

**URI Alumni Ram Club Memorial:** Offered in honor of Rhode Island alumni who sacrificed their lives in two world wars. Recipients selected on the basis of financial need, campus citizenship, scholastic ability, and leadership as evidenced by participation in sports and other extracurricular activities. Selection made by Alumni Ram Club.

**URI Alumni Rhode Island High School Scholastic Scholarships:** Ten \$1,000 awards to incoming URI freshmen based on scholastic achievement, SAT scores, and overall record in humanities, psychology and sciences, the performing and studio arts, pure and applied sciences, and professional and human services. Open to all Rhode Island high school seniors. Selection made by the Alumni Association.

**URI Citizen Scholar:** Income from endowment for a scholarship awarded annually to support seniors who have given the University exceptional service and support during their first three years at URI. Examples of the types of service and support eligible for the award are: orientation leaders, residence assistants, tour guides, peer tutors, student alumni association members, etc.

**URI Class of 1899 Memorial Scholarship:** Income from endowment for a scholarship awarded annually to students on the basis of financial need.

**\*URI Class of 1930 Scholarship:** Income from endowment for two scholarships awarded annually to undergraduate or graduate students on the basis of financial need and academic ability. Undergraduate recipients selected by Student Financial Assistance and Employment Services; graduate recipients selected by the Graduate School.

**URI Class of 1931 Memorial Scholarship:** Income from endowment for scholarships awarded annually to students on the basis of financial need.

**\*URI Class of 1933 Graduate Fellowship:** Income from endowment for a graduate fellowship.

**URI Class of 1935 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1936 Scholarship Endowment:** Income from endowment for scholarships awarded annually to undergraduate students on the basis of financial need with preference given to lineal descendants of members of the Class of 1936. If no relatives of the Class of 1936 apply, the awards will go to any applicants the University selects based on financial need and academic performance.

**URI Class of 1937 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1938 Raymond G. Bressler Memorial Scholarship:** Established by the Class of 1938 on its 50th anniversary. Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1939 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1940 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1941 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1942 Memorial Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1943 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Classes of 1944–46 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1947 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1956 Scholarship:** Income from endowment awarded annually for a scholarship for students from middle-class families who might not qualify for institutional or governmental financial aid but nevertheless need assistance with the costs of a college education.

**URI Class of 1962 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1968 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1969 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Class of 1975 Scholarship:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Foundation Academic Excellence Endowment:** Income from endowment for scholarships to undergraduate students on the basis of academic excellence.

**URI Foundation Boat Program Scholarship:** Scholarship support for a marine-related major or a crew or sailing team member. Awards based on a combination of superior academic performance and demonstrated need. Selection made by Student Financial Assistance and Employment Services. Award to be presented by the Boat Committee chair.

**\*URI Foundation Fellowship:** Income from endowment for a graduate student fellowship. Recipient selected by the dean of the Graduate School from University-wide recommendations.

**URI Foundation Trustees Scholarships:** Income from endowment for scholarships awarded annually on the basis of financial need.

**URI Men's Tennis Scholarship:** Income from endowment for a scholarship to a student on the URI men's tennis team. Selection made by the Athletics Department.

**URI Parents Fund Scholarship:** Income from endowment for a scholarship awarded to students with financial need from a fund established by parents of URI students and the URI Patrons Association.

**Daniel Urich Books Scholarship:** Income from endowment will be used for "book scholarships" awarded annually at the discretion of the women's gymnastics team for members of URI's team.

**Wal-Mart Competitive Edge Scholarship Fund:** Awarded to an incoming freshman student majoring in a technology-related field. Recipient must be a Rhode Island resident; have applied for financial aid; demonstrated high academic achievement, community service, and leadership in high school; and be registered for at least six credits. This award is renewable each year providing the student maintains a 3.00 grade point average, is enrolled full-time each semester, and continues in a technological area.

**Wardwell Braiding Machine Company Endowment:** Income from endowment for scholarships awarded annually on the basis of merit.

**Washington Trust Company Scholarship:** Income from endowment for a scholarship awarded annually for tuition assistance to undergraduate students in Washington Trust's market area, based on merit and need. Recipients selected by Enrollment Services.

**Washington Trust Scholarship:** This Washington Trust scholarship will be current (non-endowment) income, to be distributed to two URI students. Each student will receive a \$2,500 award. First preference will be given to students from South County, with a second preference to students from the Washington Trust service area (including relevant parts of Connecticut). Preference should also be given to incoming freshmen, but one award may be given to a junior or senior. Recipients must have at least a 3.0 grade point average.

**Paul L. Watelet '34 Athletic Scholarship:** Income from endowment for athletic scholarships, with first preference given to a participant in URI men's basketball. Selection made by the director of athletics.

**George F. Weston Memorial Scholarship:** Income from a fund established by the Providence Technical High School Athletic Field Association awarded annually to graduates of Rhode Island high schools and college preparatory schools who demonstrate financial need. Preference is given to former students and descendants of former students and teachers of Technical High School of Providence.

**Weygand Family Fund:** Income from endowment for a scholarship awarded when the following criteria are met. The recipient will be a Rhode Island resident who is non-traditional (in the sense of an adult student attending college for the first time or returning after an absence), has financial need, is in satisfactory academic standing, and is enrolled in a baccalaureate degree program that will lead to a career in public service to the people of Rhode Island. This individual must be involved in a University-sponsored and/or University-sanctioned community service program.

**David R. Wilkes Scholarship:** Income from endowment awarded annually to a student with financial need, with preference given to a resident of Rhode Island.

**Frank and Natalie Williams '40 Scholarship:** Income from endowment for scholarships to undergraduate students in good academic standing with genuine financial need. First preference to students from Rhode Island.

**Ruth A. Williams Scholarship:** Income from endowment for scholarships awarded annually to students from the Westerly area.

**Joseph F. Winthrop Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a resident of Aquidneck Island who is in need of financial assistance and who has shown consistent effort throughout high school. Applications can be made available at Rogers High School, Middletown High School, and Portsmouth High School.

**\*Women's Seamen's Friend Society of Connecticut:** Awards to undergraduate and graduate students from Connecticut who are in marine-oriented programs and have financial need.

**Carl R. Woodward Memorial Scholarship:** Income from endowment, a gift from the Alumni Association, available annually to students with financial need.

**Lt. Charles Yaghoobian Jr. '65 Memorial Scholarship:** Income from endowment available to a student with financial need, with first preference to residents of Blackstone Valley, R.I., majoring in physical education, and second preference to residents of Blackstone Valley regardless of major.

**Heber W. Youngken Memorial Scholarship:** Income from endowment for a scholarship awarded annually to students employed by the URI University Club.

### Arts and Sciences

**\*Ward Abusamra Scholarship in Music and Voice:** Income from endowment for a scholarship in music awarded annually to a graduate or undergraduate music major on the basis of merit. Preference given to students concentrating in voice or chorus. Recipient to be selected by the Department of Music Recruitment and Awards Committee during annual spring auditions.

**Heidi Allen Memorial Scholarship:** Income from endowment, established by parents and friends of Heidi Allen, awarded to a student with financial need who is a political science major.

**\*Robert Allen Memorial Endowment:** In memory of Robert W. Allen, Ph.D. '72. Income from endowment for a scholarship awarded annually to a science major, either undergraduate or graduate, with a GPA of 3.0 or better.

**Lee Armstrong Memorial Scholarship:** Income from endowment for scholarships awarded annually to one or two undergraduate women in the College of Arts and Sciences on the basis of merit and financial need.

### Sona Aronian and Geoffrey Gibbs

**Scholarship in Music Composition:** Income from endowment for a scholarship awarded annually to a music major who demonstrates artistic achievement in music composition. Selection by the Music Department.

**Balmforth Family Endowed Scholarship in Pre-Med Studies:** Income from endowment for a scholarship awarded annually on the basis of merit and need to support a student majoring in the biological sciences, chemistry, or any other program in the College of Arts and Sciences who has expressed an interest in medicine, veterinary medicine, or another health-related field.

### Victor J. Baxt Chemistry Scholarship

**Endowment:** Income from endowment for a scholarship awarded annually to graduate students in chemistry based on merit. Preference given for summer study and research. Selection made by the Department of Chemistry.

**Beaupre Family Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate student majoring in the College of Arts and Sciences. Recipient should be a married student with at least one child whom he/she is supporting. The student must also have financial need and must be a legal resident of Rhode Island.

**Bessie D. Belmont Memorial Scholarship:** Gift of Dr. and Mrs. Ralph S. Belmont in memory of his mother. Income from endowment awarded annually to an undergraduate majoring in natural sciences on the basis of scholarship and/or diligent application and financial need.

**\*Stanley Berger Memorial Scholarship:** Income from endowment awarded annually to a graduate student in clinical psychology. Recipient selected by the Department of Psychology.

**Mary Braga Scholarship:** Income from endowment for a scholarship to a female undergraduate in the College of Arts and Sciences of Portuguese descent. Preference will be given to a Rhode Island resident and to the older student. The dean of the College of Arts and Sciences will determine the recipient.

**\*Bertran M. Brown '36 Endowment:** Income from endowment for graduate student support in the Department of Chemistry.

**Phyllis R. Brown Chemistry Endowment:** Income from endowment for fellowship stipends awarded annually to graduate students who are in the graduate chemistry program. Selection made by the Chemistry Department.

### Norma Bugbee Memorial Scholarship Fund:

Income from endowment for scholarships for deserving juniors and seniors in the University's food sciences and nutrition, textiles, and music programs in loving memory of Norma Bugbee Starr, Class of 1944. Award of scholarships to be based upon candidate's scholastic achievements and ability without reference to financial resources of the candidate or his or her parents.

**R. Craig Caldwell Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in computer science on the basis of scholastic ability alone. Recipient selected by the College of Arts and Sciences.

**Roderick Caldwell Endowment Scholarship in Mathematics:** Income from endowment awarded annually to an undergraduate student majoring in mathematics who has demonstrated above-average academic promise and genuine financial need. Recipient selected by Student Financial Assistance and Employment Services and the Department of Mathematics.

**Bruce D. Campbell Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate student in the Physics Department on the basis of academic merit with preference given to Rhode Island residents. Recipient selected by the chairperson of the Physics Department.

**Eleanor M. Carlson Trust Scholarship:** Income from endowment for scholarships awarded annually to students in the women's studies program. Recipient selected by the director of the women's studies program.

**Eleanor M. and Oscar M. Carlson Scholarship Fund:** Income from endowment for scholarships awarded annually to women students who are single-parent heads of household and who have one or more dependent children. Preference will be given to students who meet one or more of the following criteria: 1) choice of a nontraditional education track, 2) financial need, 3) good academic standing, 4) Rhode Island resident, and 5) a major or minor in women's studies. Recipients selected, in consultation with Student Financial Assistance and Employment Services, by a committee comprising the head of the women's studies program, URI faculty members (three women and one man) associated with the women's studies program, and, if it exists, one member of the Women's Studies Council. One scholarship will generally be equal to in-state tuition plus a book allowance.

**College of Arts and Sciences Scholarship:** Income from endowment used for the benefit of undergraduate and graduate students in the College of Arts and Sciences. Awards will be made by the dean of the college based on financial need and academic qualifications.

**Paul H. Conway '84 Memorial Scholarship:** Scholarship providing tuition support for an in-state student, selected by an essay competition in the College of Arts and Sciences. Applicants should be Rhode Island residents majoring in any undergraduate degree program offered by the college, full-time students in good academic standing, and in their sophomore or junior years. Students who may have had a challenging first semester at URI, but who have improved their subsequent academic performance, are encouraged to apply. Applications available in the dean's office.

**\*Department of Theatre Scholarship**

**Endowment:** Income from endowment to be used for the benefit of the undergraduate and graduate students in the Department of Theatre. Scholarships will be awarded by the chair of the department, in consultation with Student Financial Assistance and Employment Services, and will be based on financial need and/or academic qualifications.

**Robert A. DeWolf Scholarship:** Income from endowment for a scholarship in zoology awarded annually. Recipient selected by the Department of Zoology.

**James and June Diller Scholarship:** Income from endowment for full scholarships to incoming students who are Rhode Island residents with financial need intending to major in any of the following areas: physics, chemistry, computer science, math, chemical engineering, or computer engineering.

**Dr. Joseph D. DiMase Scholarship in Pre-Med Studies:** Income from endowment for a scholarship awarded annually to a third- or fourth-year student with financial need who is pursuing any pre-med major.

**Wilbur Doctor Endowed Journalism Scholarship:** The endowment shall be used to support an undergraduate scholarship for a URI junior or senior journalism major. Determination will be made based on academic achievement and demonstrated promise as a future print or broadcast professional. The selection will be made by a committee comprising the chair of the Department of Journalism and/or his/her designees.

**Dodd Family Scholarship:** Income from endowment awarded annually to a student with junior standing majoring in biology or an ocean-related field. The recipient should be from Rhode Island, have demonstrated financial need, and have at least a 3.00 grade point average.

**Dorothy F. Donnelly Scholarship in Women's Studies:** Income from endowment awarded annually for a scholarship to sophomores, juniors, or seniors who are declared majors or minors in women's studies. Based on academic excellence, community/campus service, and financial need.

**Carrie G. and Daniel M. Doody Memorial Scholarship:** Income from endowment for an award to the student(s) that best exemplifies the philosophy and spirit of the Department of Communication Studies.

**Otto Dornberg Study Abroad Endowment:** Income from endowment for awards to promote study abroad for students of German. Selection made by the German section of the Languages Department.

**Duffy Endowed Scholarship:** Income from endowment for a scholarship awarded annually to a junior or senior majoring in economics, journalism, history or political science on the basis of academic average (3.8 or better) and demonstrated financial need. Recipient selected by the dean of the College of Arts and Sciences in consultation with the student financial aid office.

**\*Catharine and Walter Eckman Memorial Scholarship:** Income from endowment awarded annually to a graduate student in the humanities (including English, comparative literature, languages, history, philosophy, music, and political science). Recipient selected by the Graduate School Committee on Scholarships and Fellowships.

**Ralph W. England and Robert V. Gardener Scholarship:** Income from endowment for a scholarship in sociology for deserving students on basis of merit. Recipient selected by the chair of the Department of Sociology and Anthropology or designee.

**Thomas V. Falciglia Honorary Scholarship:** Income from endowment awarded annually to a music major concentrating in piano, organ, orchestral instrument, or voice on the basis of musical achievement or contribution to the music program, or to a musically talented freshman, with preference to students with financial need. Selection made by the Department of Music.

**Robert H. and Marjorie P. Fillmore Memorial Scholarship:** Income from endowment awarded annually to an undergraduate or graduate student who will be or is pursuing a degree in ocean studies. Awarded by the dean of GSO on the basis of good academic standing and financial need or other priorities as determined by the dean.

**Fine Arts Scholarship:** Scholarship awarded annually to a music major demonstrating financial need.

**Lillian and Benjamin Fine Memorial Scholarship:** Income from endowment awarded annually to an undergraduate in journalism with financial need.

**\*R. Ken Force Graduate Fellowship in Analytical Chemistry:** Income from endowment for a fellowship awarded annually to a graduate student studying analytical chemistry. Recipient selected by the Department of Chemistry.

**\*Alex V. and Elli A. Fricke Memorial Scholarship:** Income from endowment for scholarships awarded annually to students majoring in ecology-related programs on the basis of good academic standing and financial need. First preference to students from Cranston and/or Rhode Island.

**\*Elizabeth D. Futas Scholarship:** Income from endowment for a scholarship awarded annually to a student in the Graduate School of Library and Information Studies. Recipient selected by the GSLIS.

**Madelyn Grady Geisser Endowed Scholarship:** Income from endowment for a scholarship awarded annually to a female student enrolled in the College of Arts and Sciences who demonstrates financial need and is a single parent, head of household. The scholarship will be in the form of either a tuition waiver, textbook waiver at the URI Bookstore, or day care waiver at the on-campus day care facility. Recipient selected by the dean of Arts and Sciences and Student Financial Assistance and Employment Services.

**Elia and Roberto Germani Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate in the College of Arts and Sciences on the basis of academic merit with preference given to Rhode Island residents. Recipient selected by the dean of the college.

**\*Graduate Library School Scholarship:** Income from endowment awarded annually to a student enrolled in the Graduate School of Library and Information Studies. Recipient selected by the GSLIS.

**John M. Grandin Scholarship:** Income from endowment for a scholarship awarded annually to qualified undergraduate students enrolled in the IEP.

**Rox-Ellene Greenlaw English Scholarship:** Income for endowment for a scholarship awarded annually to a female English major in her third year at URI who is a Rhode Island resident. The award is based on academic excellence and achievement, dedication to studies, personal integrity, willingness to assist others, and love of the literary arts. Selection made by the Department of English.

**Cynthia Grinnell Scholarship:** Income from endowment for a scholarship awarded annually to women students majoring in mathematics or science based on financial need and academic merit.

**Dr. Adolphus C. Hailstork III Music Scholarship for Minority Students:** Income from endowment for a scholarship awarded annually on the basis of merit to minority students entering the Department of Music. Selection made by the Department of Music.

**Mona Zakaria Hamer Memorial Fellowship:** Income from endowment for a fellowship awarded annually in chemistry with preference to a student doing cancer-related research. Selection made by the Chemistry Department.

**John I. Hardy Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in biology.

**The Violet Grace Hellman Prize in Languages:** Income from endowment awarded annually for prizes to undergraduate students who demonstrate skill and passion for foreign languages.

**Hutton Senior Prize in Hispanic Studies:** Income from endowment for an award made annually to a senior specializing in Spanish or Hispanic studies who has taken a course devoted to the works of Cervantes or a course devoted to his classic Don Quixote, and has a 3.0 overall average and a 3.0 average in Spanish. Selection made by the Spanish section of the Languages Department.

**Frederick and Katherine Jackson Scholarship Endowment:** Income from endowment for a scholarship awarded annually to a student with financial need in the College of Arts and Sciences who is enrolled in the physical, biological, or social sciences, or in the humanities.

**Jazz Studies Scholarship:** Income from endowment for a student pursuing the study of jazz. Selection made by the Department of Music.

**Evelyn Siefert Kennedy Endowed Scholarship:** Income from endowment will fund a scholarship for a student majoring in Italian studies, textile sciences, or fine arts who demonstrates financial need. Preference will be given to students of Italian heritage.

**\*G. Dickinson Kenney and Virginia Stiles Chemistry Scholarship:** Income from endowment for a scholarship awarded to an undergraduate chemistry major for summer study or research. If there is no qualified summer recipient, a scholarship will be awarded to an incoming or current undergraduate or graduate majoring in chemistry.

**Janet M. Kulberg Memorial Fund in School Psychology:** Income from endowment awarded annually for a scholarship to graduate students enrolled in the school psychology graduate program on the basis of need and merit.

**Eric F. Kumpf Memorial Journalism and Political Science Scholarship:** Income from endowment for scholarships awarded annually to undergraduate political science and journalism majors on the basis of need and merit.

**James Ladewig Scholarship:** Income from endowment for scholarships awarded annually to students majoring in music.

**Mary Langdon Memorial Scholarship in Voice:** Income from endowment awarded annually for a scholarship to a music major studying voice. Selection made by the Music Department.

**Lee Family Endowed Scholarship in Music:** Income from endowment awarded annually to incoming students (freshmen or transfer) in music with preference to those concentrating in composition, piano or saxophone. A returning music major may be eligible. Recipient selected by the Department of Music along with the department's Scholarship Committee.

**June Rockwell Levy Memorial Scholarship:** Income from endowment for a scholarship awarded annually to music students with financial need.

**Lincoln Environmental Endowed Scholarship Fund:** The fund shall provide annual scholarship assistance based on academic merit and financial need to a student pursuing an undergraduate degree with a focus in environmental science. The scholarship may be awarded to a qualified undergraduate student pursuing a degree in engineering, geology, or chemistry. Undergraduate students in any degree program with a parent currently employed by Lincoln Environmental, Inc. may also be considered.

**John T. McCarthy '36 Memorial Scholarship:** Income from endowment for a scholarship in zoology awarded annually to a deserving junior or senior, with preference to a student planning to attend a veterinary school.

**James D. McCartin Scholarship:** Income from endowment for a scholarship awarded annually to a United States citizen who is a full-time junior year mathematics major with a minimum 3.0 overall G.P.A. and a minimum 3.25 G.P.A. in mathematics.

**McKee Family Scholarship:** Scholarship in the College of Arts and Sciences awarded annually to a student with a B- to B+ average and demonstrated financial need who comes from the Blackstone Valley.

**Nancy McKinstry Endowed Scholarship in Economics:** Income from endowment for a scholarship awarded annually to students majoring in economics. The scholarship is based on merit and need.

**\*William D. and Clarice Metz Scholarship:** Income from endowment for an award annually to a graduating senior for excellence and a scholarship awarded annually to a graduate student in history who shows great promise in advancing the understanding of historical issues. Recipient selected from recommendations by History Department faculty.

**Thomas W. Miller Scholarship:** Income from endowment for a scholarship awarded annually to students from New Jersey, preferably majoring in the sciences, with both financial need and academic achievement.

**Ryan Mone Memorial Scholarship:** Income from endowment awarded annually to graduating seniors at Martha's Vineyard Regional High School and then to graduating seniors of Cape Cod or Nantucket high schools who are planning to attend URI. Recipient selected by dean of Arts and Sciences and principal of Martha's Vineyard Regional High School.

**Mother Jones Endowed Scholarship:** Income from endowment for a \$500 scholarship in women's studies awarded annually on the primary basis of financial need and the secondary basis of scholarly excellence. Selection made by the Women's Studies Program Committee.

**\*Sebastian P. and Marybelle Musco Voice Scholarship:** Income from endowment for a scholarship awarded annually to assist undergraduate and graduate music majors who are studying voice and are interested in pursuing careers in opera and vocal performance.

**E.A. Palmetier Memorial Award in Biological Sciences:** Income from endowment for an award given annually to an undergraduate student in the Department of Biological Sciences who demonstrates academic excellence. Recipient selected by the chairperson of the Department of Biological Sciences.

**Pardee Memorial Scholarship:** Income from endowment will be awarded 50 percent to undergraduates majoring in, or incoming students intending to major in, economics or philosophy, and 50 percent to students studying at Richmond College in London, under the sponsorship of the American Institute for Foreign Study Program. Students must demonstrate financial need, be in good academic standing, and demonstrate motivation. Preference given to students from Maine.

**Bill Parrillo Memorial Journalism**

**Scholarship:** The endowment shall be used to provide undergraduate scholarships for deserving URI junior or senior journalism majors who demonstrate promise in the field of print journalism, particularly sports journalism. Recipients must also demonstrate academic achievement and financial need. The selection will be made by a committee comprising the chair of the Department of Journalism and/or his/her designees.

**Colonel Alden E. Peterson Memorial**

**Scholarship:** Income from endowment for a scholarship awarded annually in the field of languages or business based on students' academic average and financial need.

**Petrocelli Scholarship in Computer Science:**

Income from endowment awarded annually for a scholarship to undergraduate students in good standing who are (or demonstrate a definite intention to become) computer science majors. Awarded on the basis of academic merit. Students must be U. S. citizens with preference to those from Westerly, Rhode Island.

**Thomas R. Pezzullo Memorial Scholarship:**

Income from endowment awarded to an undergraduate student on the basis of talent in theatre and on financial need. Recipient selected by the Theatre Department and Student Financial Assistance and Employment Services.

**Nancy Potter Endowment:** Income from endowment awarded to a high-ranking junior majoring in English. Recipients selected by the Department of English.

**Presser Scholarship:** Award given to an outstanding music major at or after the end of his or her junior year. Recipient selected by the Department of Music.

**W. Donald and Jane Rankin Scholarship in Music:**

Income from endowment for a scholarship awarded annually to an undergraduate music student. Preference given to a student with financial need. Recipient selected by the chairperson of the Department of Music and Student Financial Assistance and Employment Services.

**Mary A. Silverman Ravin, M.D., '44 Scholarship:**

Income from endowment for a \$250 scholarship given annually to the highest-ranking female premedical student at the close of her junior year.

**Elton Rayack Scholarship in Economics:**

Income from endowment for a scholarship awarded annually to an economics major. Preference is given to those with financial need who have demonstrated a strong commitment to social justice and a strong academic record, based on GPA.

**Harold A. Riemschneider Award:**

Income from endowment for an award given annually to a student pursuing studies in radiation either in the Department of Biological Sciences or the Department of Chemistry. Recipient selected by Student Financial Assistance and Employment Services in consultation with these departments.

**Max Rosen Memorial Scholarship:**

Income from endowment awarded annually to a student with financial need, preferably a junior, majoring in history with emphasis on American history. Selection made by the Department of History.

**Mark Ross Endowed Scholarship:**

Income from endowment for annual awards to undergraduate Arts and Sciences students. Recipients selected by the College of Arts and Sciences.

**Brett Santoro Memorial Scholarship:**

Income from endowment for a scholarship awarded annually, on the basis of need, to a student majoring in the biological sciences.

**Dana Shugar Memorial Scholarship:**

Income from endowment for a scholarship to alternate between the English and Women's Studies departments. Selection made by the two departments.

**Jesse M. Simmons Memorial Scholarship:**

Income from endowment for a scholarship awarded annually to a student with financial need, who is studying art and who shows promise in the area of painting.

**Warren Smith Scholarship:** Income from endowment for a scholarship awarded annually to an English major.

**South County Center for the Arts Music Talent Scholarship:**

Income from endowment for a scholarship awarded annually to full-time undergraduate music majors who are graduating from a South County high school (North Kingstown, South Kingstown, Chariho, Westerly or Narragansett) based on musical talent. If no entering freshmen from these schools are music majors, the scholarship can be awarded to a former graduate of a South County high school. Recipient selected by an auditor before the scholarship and recruitment committee of the Department of Music.

**Edna L. Steeves Memorial Scholarship:**

Income from endowment for a scholarship awarded annually to an English major with high academic achievement. Recipient selected by the Department of English.

**John Stitely Memorial Scholarship:**

In memory of Professor John O. Stitely, Hon '71, income from endowment for a scholarship in political science.

**Donald Strauss Legislative Internship**

**Endowment:** Income from endowment given preferably to a member of the junior class to finance a summer at the Rhode Island Legislature, serving either a state senator or state representative. Recipient selected by Department of Political Science designee.

**M. Beverly Swan Endowment:** Income from endowment for a scholarship awarded annually to a female student majoring in English on the basis of financial need with consideration given to academic achievement.

**Mildred C. Thelen URI Summer Study**

**Program in Salamanca, Spain Scholarship:** Income from endowment for scholarships awarded annually to students who are declared Spanish majors/double majors and M.A. students in Hispanic Studies; based on the completion of at least one 300-level literature/culture course and enrollment and participation in the URI Summer Study Program in Salamanca, Spain

**Daniel Thomas Scholarship in History:**

Income from endowment for scholarships awarded annually to undergraduate history majors based on need and merit. Selection made by the Department of History and Student Financial Assistance and Employment Services.

**Ruth E. Trexler Scholarship:** Income from endowment for a scholarship in music.

Recipient selected by the Department of Music.

**URI-Bank of America Scholarship:** Annual scholarship awards of \$2,000 for academically talented Rhode Island high school students

with demonstrated financial need. The recipients must major either in economics or in business administration and maintain an overall 3.00 grade point average to retain the scholarship. Recipients selected by a committee of faculty from the Department of Economics and the College of Business Administration.

**\*Milton Waltcher '41 Memorial Endowment:**

Income from endowment for annual awards to go to a deserving chemistry graduate student during summer months and to a deserving undergraduate student in mechanical engineering.

**Wardwell Braiding Machine Company Scholarship:**

Students majoring in computer science or engineering are eligible for \$1,000 awards each year until graduation, provided they maintain a grade point average of 3.0 starting in their freshman year. First preference to URI students from immediate families employed by Wardwell, second preference to students enrolled from Pawtucket or Central Falls, and third preference to students from the Blackstone Valley.

**David Warren Scholarship:** Income from endowment awarded annually to a student majoring in political science. Recipient selected by the Department of Political Science.

**George Wiley Memorial Scholarship:** Income from endowment awarded annually to an African-American student in the College of Arts and Sciences who shows an interest in community service, government or issues of social concern. Recipient selected based on merit, by the dean with recommendations from interested faculty.

**\*Norris Wood Microbiology Award:** Income from endowment for an annual award in the field of microbiology. Recipient selected by the Department of Biochemistry, Microbiology and Molecular Genetics.

**Frank L. Woods Memorial Scholarship:** Established by family and friends as a permanent memorial in honor of Dr. Woods, URI professor of German and linguistics, the scholarship provides support for a junior or senior majoring in German or German linguistics. Recipients will be chosen by members of the German faculty. Awards for tuition, fees, and other University expenses will be made by Student Financial Assistance and Employment Services.

**Wrigley Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in Italian who wishes to study abroad. Recipients selected by Professors Trivelli and Viglionese or their designees.

**Business Administration****American Production and Inventory Control Society, Providence Chapter (APICS)**

**Award:** Awarded annually to a senior with a major or minor in production and operations management who is also a member of APICS.

**AMICA Mutual Insurance Scholarship:**

Income from endowment for scholarships to students in the College of Business Administration. Recipients selected by Student Financial Assistance and Employment Services and the college.

**Anderson Family Trust:** Income from endowment for a scholarship awarded to a student majoring in insurance.

**\*David Beretta '49 Endowment:** Income from endowment for a scholarship awarded annually to provide support for either a student enrolled in the College of Engineering with a minor in business or for a graduate in engineering who wishes to pursue full-time study for a master's degree in the College of Business Administration. Recipient selected by a joint decision of the deans of both colleges.

**Dr. Winfield S. Briggs Memorial Scholarship:** Income from endowment available to students in accounting with financial need.

**Frederick J. and Karen F. Buchsbaum Accounting Award:** Income from endowment for a scholarship awarded annually with preference to a third-year accounting major from New Jersey on the basis of merit and financial need. Selection made by the Department of Accounting and Student Financial Assistance and Employment Services.

**Anthony DiPetrillo Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate in the College of Business on the basis of financial need.

**Austin J. Dwyer and Francis J. Wilcox Memorial Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate or graduate student in the College of Business Administration who is in good academic standing and has financial need.

**Elterich Family Endowment:** Income from endowment for a scholarship awarded annually to a deserving undergraduate in the College of Business Administration who is interested in management information or another technology-related field. Student is selected on the basis of merit, with preference given to those with financial need.

**Saul Fern Marketing Scholarship:** Income from endowment to a junior majoring in advertising and/or marketing with preference to members of the Rho Iota Chapter of Zeta Beta Tau Fraternity.

**Warren Ferriter Memorial Scholarship:** Income from endowment awarded annually to majors in the College of Business Administration with outstanding academic records and demonstrated financial need.

**James '76 and Nancy '77 Forte Scholarship in Business and Nursing:** Income from endowment for a scholarship awarded annually in the College of Business Administration and the College of Nursing.

**Jack Fradin Scholarship:** Income from endowment awarded annually to a junior-year accounting major based on academic performance and financial need.

**Peter M. and Mildred J. Galanti Business Award in Accounting:**

Income from this endowment will be given to a student based on financial need and academic performance.

**Peter M. and Mildred J. Galanti Scholarship:** Income from endowment awarded annually to a student from New Jersey enrolled in the College of Business Administration.

**Francis S. Goff Jr. '35 Scholarship:** Income from endowment awarded annually to undergraduate students majoring in business on the basis of good academic standing and genuine financial need. First preference to employees or children of employees of Providence Mutual Fire Insurance Company. Second preference to students from Rhode Island.

**Saul and Alfred Goldstein Scholarship:** Income from endowment available to a student with financial need, with preference to College of Business Administration students.

**\*George and Lois Graboys Minority Student Endowment:** Awarded annually to minority students with financial need wishing to pursue a business degree. First preference to undergraduates, but graduate students will be considered. The minimum grade point average for an undergraduate recipient is 2.70 and for a graduate student 3.00. Scholarships will be awarded to eligible students with the highest grade point average.

**David H. Gulvin Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a graduate or undergraduate student in the College of Business Administration who displays leadership in the community, has financial need, and is in good academic standing.

**Hospital Trust Minority Scholarship:** Income from endowment for four-year scholarships awarded annually to one male and one female minority student enrolled in the College of Business Administration who are graduates of a Rhode Island high school and are Rhode Island residents. Candidates must demonstrate academic and leadership potential, as well as financial need, as determined by Student Financial Assistance and Employment Services. Recipients may retain the scholarship for four years if they maintain a 2.50 grade point average. Recipient selected by the dean of the College of Business Administration.

**Independent Insurance Agents of Rhode Island Scholarship:** \$2,500 awarded annually to deserving students in risk management and insurance. Selection made by the Department of Finance and Insurance.

**Carl W. Kaiser Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a senior majoring in management with financial need.

**Russell C. Koza Memorial Polish Heritage Scholarship:** In memory of Professor Russell C. Koza. Income from endowment for a scholarship awarded annually to a student in the College of Business Administration with first preference to students of Polish heritage.

**Paul and Marguerite Lischio Endowment:** Income from endowment will be used to provide scholarships for students studying civil engineering in the College of Engineering and/or for students studying in the College of Business Administration.

#### **George B. and Mildred L. McKown Scholarship:**

Income from endowment to a student from New Jersey who is enrolled in the College of Business Administration.

**Anne O'Connell '60 and John D. Stich '76, M.S. '80 Memorial Scholarship:** Income from endowment for the support of an undergraduate business student studying in a German-speaking country, or if there is no such student, an undergraduate student attending the German Summer School of the Atlantic at URI. Recipient selected by the College of Business and the German Language Department.

#### **Colonel Alden E. Peterson Memorial Scholarship:**

Income from endowment for a scholarship awarded annually in the field of languages or business based on students' academic average and financial need.

**Everett Picchione Memorial Scholarship:** Income from endowment for a scholarship in accounting awarded annually to a deserving student from Rhode Island. Recipient selected by Student Financial Assistance and Employment Services and the Department of Accounting.

**Marvin and Pearl Miller Pitterman Business Scholarship:** Income from endowment awarded annually for a scholarship to a finance major based primarily on financial need and secondly on academic merit.

**Ralph C. Potter Scholarship:** Income from endowment available to a student in the College of Business Administration with financial need.

**Rhode Island Association of Insurance and Financial Advisors Scholarship:** Income from endowment for a scholarship awarded annually to an outstanding student in finance who is a Rhode Island resident. Selection made by the Department of Finance.

**Rhode Island Society of Certified Public Accountants Scholarship:** An annual scholarship award of \$200 to a sophomore or junior majoring in accounting who has a good scholastic record. Selection made by the Department of Accounting.

#### **Brooksy A. Sanderson Memorial Scholarship:**

Income from endowment for a scholarship awarded annually to a worthy student with financial need who is majoring in accounting.

#### **Billy and Ashley Streiter Memorial Scholarship:**

Annual grant of \$2,000 to a full-time freshman, sophomore, or junior who is a caring individual responding to the needs of others within his or her community and is an enthusiastic, compassionate person with a sense of gratitude. A grade point average of 3.0 is encouraged.

#### **Timothy J. and Mary English Sullivan Scholarship:**

Income from endowment for scholarships awarded annually to students majoring in accounting with preference given to children of employees of Sullivan and Company.

**URI-Bank of America Scholarship:** Annual scholarship awards of \$2,000 for academically talented Rhode Island high school students with demonstrated financial need. The recipients must major either in business administration or in economics and maintain an overall 3.00 grade point average to retain the scholarship. Recipients selected by a committee of faculty from the College of Business Administration and the Department of Economics.

#### **Nancy and Joseph Vuono Family Scholarship:**

Income from endowment for scholarships awarded annually to Rhode Island high school graduates studying in the College of Business Administration based on financial need with preference to those majoring in accounting.

**Joseph M. Wagner Scholarship:** Income from endowment for a scholarship awarded annually to an older than average student in the College of Business Administration.

**David J. Weiner Scholarship:** Income from endowment for scholarships awarded annually to students in the College of Business Administration.

#### **Continuing Education**

**Dr. Richard M. Bianco Scholarship:** Income from endowment for scholarships awarded annually to "women in transition" enrolled in the BGS Program of the Alan Shawn Feinstein College of Continuing Education for tuition and/or books on the basis of merit. Recipient selected by the ASFCCE Scholarship Committee.

#### **Richard W. and Ronald S. Buteau Scholarship:**

Income from endowment for a scholarship awarded annually to students in good academic standing with financial need enrolled in the Feinstein College of Continuing Education.

#### **Walter A. Crocker Endowment Fund:**

Income from endowment to provide grants to students in the Alan Shawn Feinstein College of Continuing Education, for expenses related to enrollment in the college. Recipients selected by the Crocker Scholarship Selection Committee.

**Jill Smith Ellsworth Memorial Endowment:** Income from endowment for a scholarship awarded annually to students in the Alan Shawn Feinstein College of Continuing Education. Recipients selected by the college.

**Lillian Feinstein Scholarships:** Income from endowment for scholarships to Alan Shawn Feinstein College of Continuing Education undergraduate students. The Feinstein Foundation and ASFCCE participate in selecting the recipients.

#### **\*NACM RISEN Endowed Scholarship:**

Income from endowment will be divided 50/50 with 50 percent returning annually and the other 50 percent for a scholarship awarded annually, with preference to NACM RISEN members on the basis of need to students enrolled in the Alan Shawn Feinstein College of Continuing Education's business education program.

#### **Suzanna Anstine Norbeck Endowed Scholarship:**

Income from endowment for a scholarship awarded annually to a woman with minor children and financial need who is attending the Alan Shawn Feinstein College of Continuing Education with the goal of attaining a B.A or B.S.

**Janice Paff Memorial Scholarship:** Income from endowment awarded to a student in the Alan Shawn Feinstein College of Continuing Education, enabling him or her to take an initial course at ASFCCE and purchase books. Recipients selected by the vice provost of ASFCCE.

**Thomas A. and Dorothy M. Verrechia Endowment:** Income from endowment for a scholarship awarded annually to undergraduate students in the Alan Shawn Feinstein College of Continuing Education on the basis of good academic standing and genuine financial need.

#### **Engineering**

**\*Robert Allen Memorial Endowment:** In memory of Robert W. Allen, Ph.D. '72. Income from endowment for a scholarship awarded annually to a science major, either undergraduate or graduate, with a GPA of 3.0 or better.

**Philip A. and Bette A. Ayoub Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in civil engineering based on academic excellence. Selection made by the College of Engineering.

**James L. Baldwin Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a civil engineering student.

**A.J. Beaudoin Memorial Scholarship (Electrical League of Rhode Island):** Two \$1,000 grants awarded annually to Rhode Island residents who are majoring in electrical engineering and who have financial need.

**\*David Beretta '49 Endowment:** Income from endowment for a scholarship awarded annually to provide support for either a student enrolled in the College of Engineering with a minor in business or for a graduate in engineering who wishes to pursue full-time study for a master's degree in the College of Business Administration. Recipient selected by a joint decision of the deans of both colleges.

**William R. Bisson Family Endowment:** Income from endowment for scholarships awarded annually to students majoring in electrical engineering who demonstrate academic excellence and financial need. Preference to students who are Rhode Island residents.

**Norman H. Borden Memorial Scholarship:** Income from endowment established in the memory of Norman H. Borden awarded annually to a student majoring in chemical engineering with genuine financial need.

**Ronald and Lillie Bowden Memorial Scholarship:** Income from endowment for a scholarship to a student enrolled in the College of Engineering.

**George A. Brown Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student majoring in mechanical engineering.

**Gene Bucci Family Scholarship:** Income from endowment for a scholarship awarded at the discretion of the chair of the Civil Engineering Department to a female student studying civil engineering who is a Rhode Island resident.

**Alfred S. Budnick Scholarship:** Income from endowment for a scholarship awarded annually to undergraduate students in engineering who have financial need and the ability to succeed in the program.

**Joseph L. Campanella Memorial Endowed Scholarship:** Income from endowment for a scholarship awarded annually to a student who is a Bristol County resident, who maintains good grades, and is pursuing a degree in the Department of Chemical Engineering.

**Daniel O. Cargill Scholarship:** Income from endowment for a scholarship awarded annually to a student in civil engineering.

**Peter M. Carley '79 Memorial Scholarship:** Income from endowment for a scholarship awarded annually on the basis of financial need, academic performance, or a combination of both, with preference to civil engineering students.

**\*Albert E. Carlotti Endowment:** Income from endowment for undergraduate and graduate students enrolled in the College of Engineering.

**Howard Chin Scholarship in Civil Engineering:** Income from endowment awarded annually for a scholarship to a student in the department of civil/environmental engineering with preference to students who demonstrate financial need and are pursuing a career in civil/environmental engineering.

**Dr. David J. Chronley Fund in Chemical Engineering:** Income from endowment for annual creativity awards for junior or senior undergraduate students in chemical engineering and need-based undergraduate scholarships in chemical engineering. Awards and scholarships awarded at the discretion of the department chairperson.

**Francis J. Connell '49 Memorial Endowment:** Income from endowment for a scholarship awarded annually to a junior or senior majoring in civil engineering on the basis of genuine financial need and acceptable academic performance. First preference to a student from Newport; second preference to a student from Rhode Island.

**Day Family Scholarship:** Income from endowment for a scholarship awarded annually to an African-American, full-time College of Engineering student (preference to a male) who demonstrates academic excellence and financial need.

**James and June Diller Scholarship:** Income from endowment for full scholarships to incoming students who are Rhode Island residents with financial need intending to major in any of the following areas: physics, chemistry, computer science, math, chemical engineering, or computer engineering.

**Kenneth A. Epstein Engineering Scholarship:** Annual grant for a scholarship to a student enrolled in the College of Engineering.

**Kam Esmail Endowed Scholarship Fund:** Income from endowment for annual, recurring scholarship awards for undergraduate students majoring in one of the traditional civil engineering areas of concentration. To be eligible for this scholarship, a candidate must 1.) demonstrate financial need, 2.) be a Rhode Island resident, 3.) be a U.S. citizen, and 4.) be a graduate of a Rhode Island high school. Recipient selected by the College of Engineering.

**\*Matthew Flores Memorial Fund:** Income from endowment for a scholarship for a junior or senior who is a high academic achiever. Recipient must be majoring in mechanical engineering, with an interest in robotics and/or biomedical research preferred. Recipient selected by the College of Engineering.

**George Geisser Sr. Scholarship:** Income from endowment awarded annually to civil engineering student(s) in good standing and with financial need.

**George and Virginia Geisser Civil Engineering Scholarship:** Income from endowment for a scholarship awarded annually to a Rhode Island high school graduate planning to major in civil engineering who has financial need and a good academic record. Selection made by the Department of Civil Engineering and Student Financial Assistance and Employment Services.

**Geisser Engineering Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate student pursuing a degree in civil engineering on the basis of academic merit and financial need.

**Gertz Family Scholarship:** Income from endowment for a scholarship in engineering.

**John M. Grandin Scholarship:** (See description under Arts and Sciences)

**Gray Family Scholarship:** Income from endowment for a scholarship awarded annually to one or more Rhode Island resident undergraduate students in the College of Engineering. Recipient selected by the College of Engineering.

**Louis Raymond Hampton '42 Scholarship:** Income from endowment for a scholarship awarded annually on the basis of genuine financial need and academic performance. First preference given to engineering students who are dependent children of Providence Gas Company employees.

**John J. Hudson Memorial Scholarship:** Income from endowment awarded annually for a scholarship to qualified undergraduates pursuing a degree in civil engineering based on academic merit and financial need with preference to students from New England.

**International Engineering Program Scholarship:** Scholarships awarded annually to students in the International Engineering Program. Recipients selected by the College of Engineering.

**Ronald C. Jalbert Scholarship Endowment:** Income from endowment for a scholarship for a declared undergraduate civil engineering major and a Rhode Island resident. Preference to be given to qualifying children from the Maguire Group, Inc. Scholarship award to be determined by the chair of the Civil Engineering Department.

**Amos Kent, P.E., Memorial Scholarship:**

Income from endowment created by the National Council of Engineering Examiners. Awarded to a student in engineering who is entering the junior year on the basis of financial need. Selection made by the College of Engineering.

**Dean Thomas Kim Scholarship:** Income from endowment to be awarded to the most noteworthy freshman in the College of Engineering who has financial need. Recipient selected by the college along with Student Financial Assistance and Employment Services.

**Lester J. King Memorial Scholarship:**

Income from endowment for a scholarship awarded annually to a student in the College of Engineering who demonstrates academic excellence and financial need. Recipient selected by the College of Engineering in conjunction with Enrollment Services.

**Mason B. Kingsbury Memorial Scholarship:**

Income from endowment for a scholarship in engineering awarded annually. Recipient selected by the College of Engineering.

**Knickle Family Freshman Scholarship:**

Income from endowment for scholarships for freshmen majoring in chemical engineering. Funded through the generous contributions of Harold N. Knickle. Selection made by the Department of Chemical Engineering.

**Leonard '43 and Elena Lanni Family Endowment:** Income from endowment awarded annually to a major in mechanical or chemical engineering. Preference to a first-generation American who graduated from a Rhode Island high school and has genuine financial need and an acceptable academic performance. Recipient selected jointly by Student Financial Assistance and Employment Services and the College of Engineering.

**James M. Lenehan Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of Engineering with academic ability and financial need. First preference given to a student majoring in mechanical engineering whose practical experience or schooling and activities demonstrate that the student is a self-starter likely to become a manager of engineers.

**\*Gabriel Lengyel Fellowship in Electrical Engineering:** Income from endowment established by the late Ruth Braun for a fellowship awarded annually to the graduate student in electrical engineering with the most outstanding scholastic achievement.

**Lincoln Environmental Endowed Scholarship Fund:**

The fund shall provide annual scholarship assistance based on academic merit and financial need to a student pursuing an undergraduate degree with a focus in environmental science. The scholarship may be awarded to a qualified undergraduate student pursuing a degree in engineering, geology, or chemistry. Undergraduate students in any degree program with a parent currently employed by Lincoln Environmental, Inc. may also be considered.

**Paul and Marguerite Lischio Endowment:**

Income from endowment will be used to provide scholarships for students studying civil engineering in the College of Engineering and/or students studying in the College of Business Administration.

**Rosario J. Lombardo Scholarship in Engineering:**

Income from endowment for a scholarship awarded annually to a female student in the College of Engineering on the basis of financial need.

**A. F. Lusi Construction Engineering Ambassadors Scholarship:**

The fund shall be used to provide semester scholarships to College of Engineering Ambassadors. Selection of undergraduate students by the dean will be based upon scholastic and leadership skills. The Ambassadors will help recruit students and promote the college by providing tours for visitors and alumni. They will also represent and support the college at various URI functions.

**Robert A. Lusi Engineering Scholarship:**

Income from endowment for scholarships awarded annually to undergraduate engineering students on the basis of merit. Students may receive the award for all four years contingent upon satisfactory progress toward graduation. Selection made by the College of Engineering.

**Rudolph and Dorothy Nolan Lux '49 Scholarship for Academic Excellence:**

Income from endowment awarded annually to students in the sophomore, junior, or senior year, majoring in one of the engineering disciplines, on the basis of high academic achievement and financial need. Recipients selected by the dean of the College of Engineering.

**Charles A. Maguire and Associates Scholarship:**

Income from endowment awarded annually to students in the field of engineering with financial need.

**Carleton Maine Scholarship:** Income from endowment for a scholarship awarded annually to a deserving student in environmental, civil, or related engineering specialties who is in need of financial assistance.

**Angelo A. Marcello Memorial Scholarship:**

Income from endowment for a scholarship in civil engineering awarded annually to a junior or senior based on financial need with consideration given to academic excellence. Minimum award \$350; maximum, 50 percent of tuition. Selection made by the Department of Civil and Environmental Engineering.

**Arthur J. Minor Memorial Scholarship:**

Income from endowment for a scholarship in engineering awarded annually to students with financial need.

**Joseph A. Morrone III Scholarship:**

Income from endowment for a scholarship awarded annually in mechanical engineering on the basis of merit and/or financial need.

**Vincent E. and Estelle E. Murphy Scholarship:**

Income from endowment established in the memory of Vincent E. Murphy for a scholarship awarded annually to a student in the College of Engineering with financial need.

**John J. Murray Memorial Scholarship:**

Income from endowment for a scholarship awarded annually in the College of Engineering based on academic merit.

**Vito A. Nacci Civil Engineering Scholarship:** Income from endowment awarded annually to a student in civil engineering.

**Henry J. Nardone Family Endowment:**

Income from endowment awarded annually to a student in mechanical engineering. Preference will be given to an incoming freshman who graduated from a Rhode Island high school and has demonstrated financial need.

**Narragansett Improvement Company Scholarships:**

Income from endowment for scholarships awarded annually to majors in civil and environmental engineering who are from Rhode Island. Recipients selected by the College of Engineering. Any specific criteria will be determined by the College of Engineering in conjunction with the Department of Civil and Environmental Engineering.

**ON Semiconductor Scholarship Endowment:**

Income from endowment for scholarships awarded annually in engineering. Preference to students who are Rhode Island residents with financial need and of high academic caliber. Recipients selected by the dean of the College of Engineering.

**Charles Pagella Memorial Scholarship:**

Income from endowment for an annual scholarship to engineering students.

**Piacitelli Family Scholarship:** Income from endowment awarded annually to provide in-state tuition and fees to a sophomore engineering major who is a Rhode Island resident. The dean of the College of Engineering, in cooperation with the college's academic advisor, will work in concert with the donors to honor and fulfill the scholarship award and the donors' intentions on an annual basis.

**Francis C. Pierce Endowed Scholarship in Civil Engineering:** Funds shall be used to provide scholarship assistance annually to a qualified undergraduate civil engineering student. Selection will be based on academic merit, hardworking application, and financial need.

**Grant H. Potter Memorial Scholarship:** Income from endowment, a bequest of Warren L. Offer, for scholarships to engineering students with financial need, with preference to residents of Rhode Island specializing in the field of electronics or aeronautics.

**\*Jerry M. and Evelyn L. Rhoads Memorial Endowed Scholarship Fund:** Income from endowment for a scholarship awarded annually to one or more full-time undergraduate or graduate students based on academic merit and financial need. Preference will be given to engineering students from Rhode Island high schools.

**Rhode Island Builders Association Scholarship:** Scholarship awarded on a three-year rotational basis to civil or environmental engineering students. Preference given to immediate family of R.I. Builders Association members. Recipients must be from Rhode Island, southeastern Massachusetts, or eastern Connecticut.

**Rhode Island Public Works Association Scholarship:** Income from endowment for a \$500 scholarship awarded annually to a junior who is a resident of Rhode Island with financial need and good academic standing and is majoring in civil engineering.

**Joseph G.A. Riccio Civil Engineering Scholarship:** Income from endowment awarded annually in civil engineering. Preference given to Bristol, R.I., residents who are members of Theta Delta Chi fraternity. Student must have good academic record and genuine financial need.

**Vincent Rose Family Endowment:** Income from endowment for awards to students preferably with financial need who are obtaining practical experience in pollution prevention in the Department of Chemical Engineering.

**Halkey K. Ross '33 Scholarship:** Income from endowment awarded annually to a student in engineering on the basis of financial need and/or academic achievement.

**\*Dr. Herman E. Sheets Endowment for Ocean Engineering:** Income from endowment for scholarships and fellowships awarded annually to undergraduate and graduate students in the ocean engineering program. Recipients selected by the chairperson of the Department of Ocean Engineering.

**William F. and Pauline T. Silvia Endowment:** Income from endowment for a scholarship awarded annually to a student in the International Engineering Program in Spanish. Recipient selected by the faculty of the program.

**Sylvan Simons Scholarship in Electrical Engineering:** Income from endowment for a scholarship awarded annually in the Department of Electrical Engineering based on academic merit and financial need.

**John L. Slocum Scholarship in Civil Engineering:** Income from endowment awarded to a deserving and worthy student in civil engineering.

**Dr. Malcolm L. Spaulding and Nicole Cornillon Scholarship in Ocean Engineering:** Income from endowment awarded annually to an undergraduate student in the ocean engineering program. Priority and preference given to students of outstanding scholastic merit and achievement, at the discretion of the chairperson of the Department of Ocean Engineering.

**Toray Plastics America, Inc., Scholarship:** Income from endowment for eight scholarships to students from electrical, mechanical, or chemical engineering. Criteria for awarding these scholarships will be based on educational achievement and residence in Rhode Island. All things being equal, candidates in need, North Kingstown High School seniors, minorities, and/or women will receive preferential consideration.

**H. Winfield Tucker Jr. '43 Engineering Scholarship:** Income from endowment awarded annually to an undergraduate engineering student. Preference given to graduates of Washington County, R.I., high schools. Based on genuine financial need and academic performance.

**Royal Wales Scholarship:** Income from endowment awarded annually to a graduate of South Kingstown High School, in Wakefield, R.I., who is a full-time student at URI, meets minimum academic requirements, demonstrates satisfactory effort, and has demonstrated financial need. Preference given to a student enrolled in the College of Engineering. If there is no candidate from South Kingstown High School, the award will be given to a graduating senior from Rhode Island who meets, in order of preference, the above requirements.

**\*Milton Waltcher '41 Memorial Endowment:** Income from endowment for annual awards to go to a deserving chemistry graduate student during summer months and to a deserving undergraduate student in mechanical engineering.

**Wardwell Braiding Machine Company Scholarship:** Students majoring in engineering or computer science are eligible for \$1,000 awards each year until graduation, provided they maintain a grade point average of 3.0 starting in their freshman year. First preference to URI students from immediate families employed by Wardwell, second preference to students enrolled from Pawtucket or Central Falls, and third preference to students from the Blackstone Valley.

## Environment and Life Sciences

**\*Robert Allen Memorial Endowment:** In memory of Robert W. Allen, Ph.D. '72. Income from endowment for a scholarship awarded annually to a science major, either undergraduate or graduate, with a GPA of 3.0 or better.

**Ruth E. Atkinson Endowed Scholarship:** Income from endowment for scholarships awarded annually to undergraduate students majoring in food science, textiles, or other substantially similar fields of study on the basis of academic merit and financial need.

**John W. Atwood Memorial Scholarship:** Income from endowment awarded annually to a junior or senior in an animal science program; students to be selected by a committee on the basis of financial need, academic performance, and interest. Selection made by the Department of Fisheries, Animal and Veterinary Science.

**Salt Pond Coalition-Abby Aukerman Scholarship:** Income from endowment for a scholarship awarded annually to a junior in good academic standing who is majoring in a marine-related science. Preference will be given to an individual planning a career in environmental management whose family resides in South County. Recipient selected by the College of the Environment and Life Sciences.

**Harriet G. Bird Memorial Scholarship (Merwin Memorial Free Clinic for Animals, Inc.):** \$1,000 awarded annually to Massachusetts residents with financial need who are majoring in animal science and technology and are interested in the welfare of animals.

**Barbara Bradford Brand '30 Scholarship:** Income from bequest awarded annually to an undergraduate student in the College of the Environment and Life Sciences interested in researching ways to accelerate protection of the environment.

**W. Berkley Carter Scholarship:** Income from endowment for scholarships awarded annually to students majoring in urban horticulture and turfgrass management.

**John Samuel Clapper Memorial Scholarship:** Income from endowment established by Orville O. Clapper in honor of his father, who pioneered the development of modern turf. Awards to outstanding juniors or seniors showing marked and abiding interest in turf culture. Selection made by the College of the Environment and Life Sciences.

**Dr. James W. and Mildred L. Cobble Memorial Scholarship:** Income from endowment awarded annually to a sophomore, junior, or senior in the College of the Environment and Life Sciences, based primarily on financial need accompanied by evidence of satisfactory progress toward a degree.

**College of the Environment and Life Sciences Scholarship for Academic Excellence:** Income from endowment for a scholarship in the College of the Environment and Life Sciences awarded annually on the basis of merit.

**\*Kenelm W. Coons Marine Affairs Scholarship:** Income from endowment for a scholarship awarded annually to assist graduate students returning to school mid-career to pursue a master's degree in marine affairs. This gift is from the Coons family and family friends in honor of the retirement of Kenelm W. Coons, '78.

**Lloyd Robert Crandall Memorial Scholarship (Ashaway Line and Twine Manufacturing Company):** Income from endowment awarded annually to students in the aquaculture and fishery technology program with financial need. Selection made by the College of the Environment and Life Sciences.

**Alexander D. Daunis Memorial Scholarship:** Income from endowment for a scholarship awarded annually to students of the fisheries and aquaculture technology program who are specializing in marine fisheries. Preference to juniors or seniors from the Northeast who are maintaining a 3.00 grade point average or better. Selection made by the Department of Fisheries and Animal Veterinary Sciences.

**\*Wayne King Durfee and Bernice Anderson Durfee Aquaculture Scholarships for Academic Excellence:** Income from endowment for a \$500 scholarship awarded annually to a junior or senior who has majored in aquaculture for at least one year; the recipient is selected on the basis of merit, as evidenced in the past academic year, with first preference given to a student with a special interest in shellfish. Also, up to \$2,000 awarded, based on merit, to a graduate student with a special interest in shellfish.

**Eastern Cooperative Extension Scholarship:** Income from endowment awarded annually for a scholarship to a graduate or undergraduate student in the College of the Environment and Life Sciences with preference to 4-H Horse Club students from Newport County, RI.

**\*Marjorie Ellis Endowed Scholarship:** Income from endowment for scholarship to graduate or undergraduate students on the basis of financial need. Preference to students with an interest in nutrition and dietetics.

**Golf Course Superintendents Association of America Scholarships:** These \$500 competitive scholarships are awarded nationally on the basis of scholastic ability, professed interest in golf turf management, and recommendation of advisors. Selection made by the turf section of the Department of Plant Sciences.

**Mabel B. Goshdigian Memorial Scholarship for Academic Excellence in Dietetics:** Income from endowment awarded annually to a dietetics major on the basis of merit.

**Morton and Ruth Grossman Endowment:** Income from endowment awarded annually to students studying for the profession of turfgrass management. Recipient will be selected by faculty in the Department of Plant Sciences who serve as advisors to students majoring in urban horticulture and turfgrass management.

**Hardee's Scholarship for Academic Excellence:** Income from endowment for two scholarships awarded annually to students in the College of the Environment and Life Sciences on the basis of merit. Recipients selected by a committee of faculty representing all academic departments in the college and the director of Student Financial Assistance and Employment Services.

**Matthew J. Horridge Scholarship Fund:** The fund shall be used to provide a scholarship for a sophomore, junior, or senior in-state student, enrolled full-time in the College of the Environment and Life Sciences, specifically in the turfgrass management program. The recipient will be identified by the College of the Environment and Life Sciences Scholarship Committee, in consultation with the chairperson of Plant Sciences.

**\*Arthur D. Jeffrey Memorial Scholarship:** Income from endowment for an award to a student in landscape architecture on basis of financial need.

**Cedric C. Jennings '37 Memorial Endowment:** Income from endowment awarded annually to students with financial need who are studying entomology or plant pathology. Selection made by the plant pathology and entomology section of the Department of Plant Sciences.

**Kingston Hill Gardeners Endowment:** Income from endowment awarded annually to a junior or senior majoring in the area of plant studies on the basis of academic merit and interest.

**John M. Lawrence III Memorial Scholarship:** Income from endowment will be used for a scholarship awarded annually in the Department of Natural Resources Science. Recipient selected by the department.

**Lincoln Environmental Endowed Scholarship Fund:** The fund shall provide annual scholarship assistance based on academic merit and financial need to a student pursuing an undergraduate degree with a focus in environmental science. The scholarship may be awarded to a qualified undergraduate student pursuing a degree in engineering, geology, or chemistry. Undergraduate students in any degree program with a parent currently employed by Lincoln Environmental, Inc. may also be considered.

**Alice P. Mayer Scholarship:** Two annual scholarships of \$1,500 each to students interested in agriculture, horticulture, or fishery technology who reside in Newport County. Preference to juniors and seniors. Selection made by the College of the Environment and Life Sciences.

**William S. Moody III Memorial Endowment:** Income from endowment awarded for four years to an undergraduate in the College of the Environment and Life Sciences. The recipient(s) will be selected by the dean of the college on the basis of academic merit and interest in environmental issues and studies. Established in the memory of William S. Moody III, this endowment was donated by Mr. and Mrs. William S. Moody Jr., his parents, and Mrs. William S. Moody, his widow.

**Charles E. Olney Food Science Scholarship:** Income from endowment for a scholarship awarded annually on the basis of merit and need to an undergraduate student majoring in food science and nutrition and committed to a career in food science. Recipient selected by a committee headed by Dr. Chong Lee from the Department of Food Science and Nutrition.

**Al Owens Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of the Environment and Life Sciences on the basis of merit.

**Jean Louise Pimental '70 Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a deserving student in animal science with preference to a woman from Rhode Island. Selection made by the College of the Environment and Life Sciences.

**John E. Powell Memorial Scholarship:** Income from endowment awarded annually on the basis of worthiness and need to juniors or seniors in environment and life sciences. Selection made by the College of the Environment and Life Sciences.

**Providence Gas Environmental Scholarship:** Awarded to students preparing for careers in environmental management and residing in the household of a Providence Gas customer.

**Anna and Silvio Quattrini Memorial Scholarship:** Income from endowment for a scholarship awarded annually to an undergraduate student in the College of the Environment and Life Sciences. Preference given to a native Rhode Islander with financial need.

**Ralston-Purina Award:** A \$650 award to an outstanding student with professional interest in food science. Selection is based on scholarship, leadership, character, citizenship, potential, and need. Selection by Ralston-Purina from applications recommended by the college.

**Rhode Island Dietetic Association Scholarship:** Income from endowment for scholarships awarded annually to seniors majoring in nutrition and dietetics who are Rhode Island residents, on the basis of financial need, academic performance, and interest, effort, and commitment to pursuing a career in dietetics.

**Rhode Island Golf Course Superintendents Association Scholarship:** \$200 awarded annually to a student studying for the profession of turfgrass management who has an expressed interest in golf course maintenance. Selection made by the turfgrass management section of the College of the Environment and Life Sciences.

**Rhode Island Nurserymen's Association Scholarship:** \$150 awarded annually to a student who has completed at least five of the eight professional courses specified in ornamental horticulture and has attained the highest cumulative grade point average. Recipient selected by associate dean for instruction. Award presented at the association's spring meeting.

**Betty and Tom Shreve '42 Scholarship:** Income from endowment awarded annually for a food science and nutrition major on the basis of financial need.

**Dr. Richard S. Skogley Scholarship Endowment:** Income from endowment for a scholarship in the area of turfgrass management in the Department of Plant Sciences. Recipient selected by the Department of Plant Sciences.

**Society of Soil Scientists of Southern New England Scholarship:** Awarded to a student majoring in soil science on the basis of scholarship, extracurricular activities, character, and need. The recipient must have completed six credits in soil science.

**Southern Rhode Island Soil Conservation District Scholarship:** \$500 awarded to a junior or senior with professional interest in soil conservation or a related area. Selection made by a committee of soils faculty and district representatives, based on scholarship, experience in soil science, extracurricular activities, character, and attitude.

**Norman and Alicia Tashash Environment and Life Sciences Scholarship:** Income from endowment awarded annually for a scholarship to a junior who has a specific interest in molecular biology or microbiology based on merit.

**Jose Bowen Tombs Scholarship:** The endowment shall be used to provide scholarship assistance for women students with great financial need who wish to obtain a college degree and thus become able to support themselves and their families. Preference shall be given to former or current participants in the Rhode Island Women-Infants-Children (WIC) Nutrition Program.

**Karen Volk and Richard Volk Jr. Memorial Scholarship:** Income from endowment awarded annually on the basis of need and merit to a freshman majoring in animal science.

**Wantaknowhow Garden Club:** Scholarship awarded annually to a student in resource development.

**Watershed Watch Scholarship:** Income from endowment for a scholarship awarded annually to students in the Department of Natural Resources Science. Recipient must be in good academic standing, have demonstrated financial need, and be a major in natural resources science.

**\*Weekapaug Foundation for Conservation Scholarship Fund in Environmental Studies:** The endowment, established in memory of former trustee Richard A. Dumouchel, will support a scholarship for an undergraduate or graduate student with a demonstrated conservation ethic and academic achievement who is enrolled in an environmental science, planning, and policy major or life science major in the College of the Environment and Life Sciences. Preference will be given to a student from Westerly, Rhode Island.

## Human Science and Services

**Kathryn Beaupre Department of Communicative Disorders Scholarship:** Income from endowment for a scholarship awarded annually to students in the Department of Communicative Disorders on the basis of academic qualification, with a preference for financial need.

**\*George H. and Mary Kulik Bond Endowed Scholarship:** Income from endowment for scholarship awarded annually on the basis of financial need to a student in the College of Human Science and Services.

**Glenn C. Brown Dental Hygiene Scholarship:** Income from endowment awarded annually for a scholarship to a single mother from Washington County who is majoring in an undergraduate health profession major such as exercise science, communicative disorders, pharmacy, or pre-physical therapy.

**Elizabeth W. Christopher Memorial Scholarship:** Income from endowment awarded annually, to students in home economics who have completed their fourth semester at the University, on the basis of scholarship and evidence of potential service and concern for the welfare of others. Selection made by the College of Human Science and Services.

**Cranston Print Works Scholarship:** Income from endowment awarded annually to a student in the department of textiles, fashion merchandising and design.

**Ruth E. Curran Scholarship:** Income from endowment awarded annually to a worthy student in home economics. Selection made by the College of Human Science and Services.

**Edward D. Eddy Memorial Scholarship:**

Income from endowment for a scholarship awarded annually to junior-year students majoring in education who are graduates of Providence public schools and who want to teach in urban schools. Selection made by the School of Education.

**Martin and Claire Hawes Memorial Scholarship:**

Income from endowment for a scholarship awarded annually to a graduate of Woonsocket High School intending to study nursing or teaching, with preference to nontraditional (i.e. returning) students. The scholarship shall be based primarily on merit and awarded to the same student as long as he or she remains in the nursing or teaching program.

**Joan '86, Jennifer, and Melissa Heaton Memorial Scholarship:**

Income from endowment awarded annually to students in the human services disciplines. Selection made by the College of Human Science and Services.

**Evelyn Siefert Kennedy Endowed Scholarship:** Income from endowment will fund a scholarship for a student majoring in Italian studies, textile sciences, or fine arts who demonstrates financial need. Preference will be given to students of Italian heritage.

**Helen Gibbs Lea Scholarship:** Income from endowment for a scholarship awarded annually to an Alpha Chi Omega. First preference to a member majoring in primary education, second preference to a member majoring in any education major.

**\*Dr. Dorothy Massey Scholarship:** Income from endowment for women graduate and undergraduate students majoring in physical education.

**Mabel Streeter Perrin Scholarship:** Income from endowment for scholarships awarded annually to Rhode Island female students majoring in human development and family studies on the basis of academic standing and financial need.

**\*Dr. and Mrs. James P. Reid Scholarship:** Income from endowment for a scholarship in physical education awarded annually to a master's or doctoral student on the basis of academic scholarship, professional interest, and involvement. Preference to second-year students. Selection made by the Reid Scholarship Committee of the Department of Physical Education.

**Andrew W. Rotelli III Memorial Scholarship:** Income from endowment for a scholarship awarded annually to needy students who had formerly attended Bishop Hendricken, are enrolled in the physical education program, and are seeking a career in sports-related physiology or in physical therapy.

**Jill Sawyer Memorial Scholarship:** Income from endowment for a scholarship in merchandising or fashion design awarded annually to a sophomore, junior, or senior on the basis of financial need. Preference given to members of Alpha Xi Delta sorority.

**Albert P. Teoli Sr. Scholarship:** Income from endowment for a scholarship awarded annually to a major in the physical therapy program who is from Rhode Island on the basis of financial need and hard work.

**Lt. Charles Yaghoobian Jr. '65 Memorial Scholarship:** Income from endowment available to a student with financial need, with first preference to residents of Blackstone Valley, R.I., majoring in physical education, and second preference to residents of Blackstone Valley regardless of major.

**Nursing****\*Paul and Marcia Bigney Scholarship:**

Income from endowment for a scholarship awarded annually to a registered nurse in either the College of Nursing's undergraduate or graduate program who shows dedication to a career in nursing. Preference given to students specializing in hospice, home care, oncology, or cardiac nursing.

**Emilie C. '16 and Norman H. Borden '15 Nursing Scholarship:** Income from endowment awarded annually to a nursing student with financial need.

**M. Adelaide Briggs Memorial Scholarship:** Income from endowment available to nursing students with financial need.

**Godfrey Brown Leadership Scholarship:** Income from endowment for an annual award to a graduating senior in nursing who demonstrates leadership skills and professionalism in clinical practice. Selection made by the College of Nursing.

**Edith F. Chappell Memorial Nursing Scholarship:** Income from endowment for a scholarship awarded annually to a nursing student in either the sophomore or junior year.

**Vera J. Clark Scholarship in Nursing:** Income from endowment for scholarships awarded annually to students in the College of Nursing from Westerly or Richmond who are both worthy and needy.

**College of Nursing Scholarship:** Awarded to undergraduate students majoring in nursing. The grant will be administered by Student Financial Assistance and Employment Services.

**Joseph D'Anna Scholarship:** Income from endowment for scholarships awarded annually in nursing.

**Sharon Dubois-Hall Memorial Fund:** Income from endowment for a scholarship awarded annually in the College of Nursing.

**Wilbur and Evelyn Fagans Scholarship:**

Income from endowment for a scholarship awarded annually to a nursing student, with preference to students from New Jersey.

**James '76 and Nancy '77 Forte Scholarship in Business and Nursing:** Income from endowment for scholarships awarded annually in the College of Business Administration and the College of Nursing.

**Giuseppina and Mariano Galanti Nursing Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of Nursing. Selection made by the College of Nursing.

**\*Joseph Galanti Scholarship:** Income from endowment for a scholarship awarded annually in nursing.

**Mildred J. Galanti Scholarship:** Income from endowment for a scholarship in nursing.

**Morton and Ruth Grossman Scholarship:** Income from endowment for a scholarship awarded annually in the College of Nursing. Recipient selected by the College of Nursing.

**Martin and Claire Hawes Memorial Scholarship:** (see description under Human Science and Services)

**Kenneth and Susan Kermes Scholarship:** Income from endowment for scholarships awarded annually to undergraduate students in nursing on the basis of good academic standing and financial need.

**\*Adele Sheila Landesberg Memorial Endowed Scholarship in Nursing:** Income from endowment shall be used for financial assistance to a graduate student (master's or doctoral) in the area of psychiatric nursing, based on academic merit. The award shall be made at the discretion of, and the recipient selected by, the dean of the College of Nursing. The award may be made for each year of the recipient's academic program, for no more than four years.

**Oscar and Lauretta LaPierre Memorial Scholarship:** Income from endowment for a four-year scholarship to a student in the College of Nursing who is from Central Falls, R.I., and has demonstrated financial need.

**Gladys N. Longo Scholarship in Nursing:** Income from endowment for a scholarship awarded to a fourth-year nursing student entering the fifth year on the basis of financial need.

**Marie D. Radoccia Endowed Nursing Scholarship:** Income from endowment awarded annually to a student enrolled in the College of Nursing on the basis of academic achievement and financial need. First preference to a graduate of Richmond Elementary School.

**Roddy Charitable Trust Scholarship:** Income from endowment available to students in the College of Nursing on the basis of financial need and academic ability.

**Sigma Theta Tau, Inc., Delta Upsilon**

**Chapter Scholarship:** A \$750 grant awarded annually to a full-time student in the College of Nursing who has completed two or more clinical nursing courses on the basis of grade point average, evidence of leadership, creativity, professional commitment, and financial need. Application forms available at the College of Nursing.

**Ella Soloveitzik '37 Memorial Scholarship:** Income from endowment awarded annually to worthy nursing students or students pursuing a teaching career. First preference to students from the South County and Pawcatuck areas.

**Catherine H. Suda/Edward S. Pratt Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of Nursing. First preference to students from North Kingstown; second, Washington County; third, Rhode Island; and fourth, other qualified students. Recipient selected by the dean of the College of Nursing.

**\*Barbara Tate Scholarship in Nursing:** Income from endowment awarded annually to undergraduate or graduate nursing students in good academic standing. Award based on clinical competence. Applications available at the College of Nursing.

**Frederick '22 and Doris Louise Titchener Scholarship:** Income from endowment for a scholarship awarded annually to a student in the College of Nursing with financial need.

**Esther A. Watson Memorial Scholarship:** Income from endowment for a scholarship in nursing awarded annually on the basis of good scholastic standing, with first preference given to graduates of the Memorial Hospital School of Nursing; second preference to relatives of such graduates. Selection made by the College of Nursing.

**Louisa White Scholarship Endowment:** Income from endowment available for a scholarship to needy nursing students at the request of the dean of the College of Nursing.

**Lt. Charlie Yaghoobian Jr. Memorial Scholarship:** Income from endowment awarded annually to an undergraduate student from Rhode Island who is pursuing a degree in the College of Nursing based on academic merit and financial need.

**Oceanography**

**\*Davis Family Endowment for Fisheries Oceanography:**

**Oceanography:** Income from endowment for the Joshua MacMillan Graduate Fellowship in Fisheries Oceanography awarded annually on the basis of financial need to master's or doctoral students at the Graduate School of Oceanography with a marked interest in research related to fisheries science. Recipient selected by GSO.

**\*Farmer Family Trust-The Pacifico A. Colicci Award in Oceanography Engineering:**

**Income from endowment for an annual award to a student in the Graduate School of Oceanography who demonstrates exceptional vision and creativity in fashioning instruments for use in oceanography research.**

**\*Farmer Family Trust-The Henry S. Farmer Award in Biological Oceanography:**

**Income from endowment for an annual award to a student in biological oceanography who demonstrates exceptional creativity and interest in research designed to preserve and develop the oceans as a biological resource.**

**Robert H. and Marjorie P. Fillmore Memorial Scholarship:**

**Income from endowment awarded annually to an undergraduate or graduate student who will be or is pursuing a degree in ocean studies. Awarded by the dean of GSO on the basis of good academic standing and financial need or other priorities as determined by the dean.**

**\*Friends of Oceanography Fellowship:**

**Awarded to new oceanography students on the basis of need and merit.**

**\*Graduate School of Oceanography Alumni Endowment:**

**Income from endowment awarded annually to a Graduate School of Oceanography student on the basis of scientific proposals. Selection made by the GSO Alumni Committee.**

**\*Graduate School of Oceanography Alumni Fellowship:**

**Award provides fellowship support, based on academic record and proposed scientific research, for master's or doctoral students in any field of oceanography.**

**\*Greenwich Bay Power Squadron and Women's Auxiliary Award:**

**Granted annually to a graduate student in biological oceanography.**

**\*Robert L. McMaster Scholarship in Marine Geology:**

**Income from endowment for a scholarship in marine geology awarded annually to a graduate student on the basis of academic performance, dedication to teaching, and modesty. Recipient selected by the Graduate School of Oceanography.**

**\*Thomas and Kathy J. McNiff Endowment:**

**Income from endowment for a scholarship awarded annually to a graduate student in the marine sciences. Selection made by the Graduate School of Oceanography.**

**\*Lance A. Ricci Fellowship:** Income from endowment awarded annually to a financially deserving graduate student in the Graduate School of Oceanography. Recipients selected by the Graduate School and the Graduate School of Oceanography.

**\*Ada L. Sawyer Endowment for**

**Oceanography:** Income from endowment awarded annually to an M.S. or Ph.D. student in oceanography on the basis of financial need and/or merit. Recipient must be born in the United States and be in good standing with the University. Preference given to a woman demonstrating the spirit and ingenuity of Ada L. Sawyer.

**William E. Simmons Memorial Scholarship:**

**Income from endowment for a scholarship awarded annually in the area of Oceanography for new discoveries or research expected to be of real economic value.**

**\*Webb Family Graduate Fellowship in**

**Oceanography:** Income from endowment awarded annually to a master's or doctoral student in the Graduate School of Oceanography on the basis of genuine financial need and/or merit. The recipient is selected by the dean of the Graduate School of Oceanography.

**Pharmacy**

**Brooks Maxi Drugs Scholarship:** Grant awarded annually to students in the College of Pharmacy. Recipients selected by the dean of the college.

**Glenn C. Brown Scholarship:** (See description under Human Science and Services)

**Norman A. and Mary Campbell Scholarship:**

**Income from endowment for a scholarship awarded annually to pharmacy students in the professional curriculum who demonstrate academic proficiency and leadership in pharmacy student organizations.**

**Dr. Herb Carlin Scholarship:** Income from endowment for a scholarship in pharmacy. Selection made by the College of Pharmacy.

**\*Dr. Young Soo Choi Scholarship in**

**Pharmacy:** Income from endowment for scholarship to a graduate student in the Department of Pharmacology on the basis of financial need. Preference to international students. Recipient selected by Student Financial Assistance and Employment Services and the College of Pharmacy.

**Harriet A.F. Claflin Scholarship:** Income from endowment awarded to students in pharmacy with financial need.

**Sidney Cohn Memorial Scholarship:** Income from bequest awarded to a student in pharmacy with financial need. Selection made by the College of Pharmacy.

**\*College of Pharmacy Centennial Student Endowment:** Income from endowment for a scholarship awarded annually in pharmacy. Recipient selected by the College of Pharmacy.

**\*College of Pharmacy Graduate and Undergraduate Memorial Scholarship:** Income from endowment for a scholarship awarded annually in the field of pharmacy on the basis of merit. Recipient selected by the College of Pharmacy.

**College of Pharmacy Scholarship:** Income from endowment for scholarships in pharmacy awarded annually, first on the basis of financial need and second on the basis of academic achievement. Selection made by the College of Pharmacy.

**CVS Awards:** Three \$500 awards to students who are in their fourth or fifth year with satisfactory academic standing, financial need, and interest in a career in retail (community) pharmacy, with high preference to children of CVS employees. Selection made by the College of Pharmacy.

**CVS Endowment Scholarship:** Income from endowment for scholarships in pharmacy awarded annually to deserving students. Recipients selected by the dean of the College of Pharmacy.

**Daval Company Pharmacy Scholarship:** Income from endowment for a scholarship in pharmacy.

**David R. DeFanti Memorial Scholarship:** Income from endowment for a scholarship awarded annually to a student in pharmacy.

**Hyman Fradin Scholarship Endowment:** Income from endowment awarded annually to a minority student from Rhode Island with financial need and a successful academic record (3.00 grade point average or higher). First preference will be given to a student wishing to major in pharmacy; if that is not possible, the support will go to a deserving student in any academic field. The recipient must also have demonstrated leadership in nonacademic settings.

**\*William John and Joseph E. Golini Scholarship in Pharmacy:** Income from endowment for stipends awarded annually to graduate students in pharmacy. Recipients selected by the dean of the College of Pharmacy.

**Florence Champlin Hamilton Memorial Scholarship:** Income from endowment awarded annually to a student in pharmacy on the basis of scholastic ability and financial need. Selection made by the College of Pharmacy.

**Hannaford Brothers Co. Scholarship:** Scholarship awarded annually to a student in pharmacy. Recipient selected by the dean of the College of Pharmacy.

**Edward M. Lee Scholarship Endowment:** Income from endowment awarded annually to pharmacy students from the Woonsocket and North Smithfield areas. Selection made by the College of Pharmacy.

**Gladys N. Longo Scholarship in Pharmacy:** Income from endowment for a scholarship in pharmacy on the basis of financial need.

**National Association of Chain Drug Stores, Inc. Scholarship:** Annual grant for scholarships for pharmacy students on the basis of satisfactory academic standing, financial need, and career interest in community pharmacy practice. Selection made by the College of Pharmacy.

**\*Joseph F. and Josephine D. Navach Scholarship:** Income from endowment awarded annually to a pharmacy student in good standing with genuine financial need. Preference to a graduate of a Rhode Island high school. Funded through the generous contribution of Josephine Delise Navach '34 and the late Joseph F. Navach '34. Selection by the College of Pharmacy in conjunction with Student Financial Assistance.

**Gertrude I. and Henry Nelson Jr. Memorial Scholarship:** Income from endowment awarded annually to a student in pharmacy with financial need.

**William G. Peckham Memorial Scholarship:** Established by the will of Mary M. Peckham (Mrs. William G.), the scholarship provides funds to a first-year student enrolled in pharmacy and continues until graduation if merited by scholastic performance. Selection made by the College of Pharmacy.

**Rhode Island Pharmaceutical Association Award:** \$300 awarded annually to a junior or senior in the College of Pharmacy on the basis of scholastic ability and financial need. Selection made by the College of Pharmacy.

**Rhode Island Pharmaceutical Association Scholarship Endowment:** Income from endowment for a scholarship in pharmacy awarded annually on the basis of financial need to third-, fourth-, or fifth-year students.

**Lionel R. Savaria Scholarship:** Income from endowment for a scholarship awarded annually in pharmacy.

**Southeastern Massachusetts Pharmaceutical Association Scholarship:** Income from endowment for a scholarship awarded annually to a third-, fourth-, or fifth-year pharmacy student from southeastern Massachusetts. Priority to scholastic excellence above financial need. Selection made by the College of Pharmacy.

**Stop & Shop Company Scholarship:** Scholarship awarded annually to a student in pharmacy. Recipient selected by the dean of the College of Pharmacy.

**Mary C. Tafuri Memorial Scholarship:** Income from endowment awarded annually to a pharmacy student interested in the practice of community pharmacy.

**Walter B. Thompson Memorial Scholarship:** Income from endowment for a scholarship in pharmacy awarded annually to a deserving student. Selection made by the College of Pharmacy.

**Daniel P.N. Tsao Memorial Scholarship:** Income from endowment awarded annually to a pharmacy student.

**URI Class of 1926 Scholarship in Pharmacy:** Income from endowment for a scholarship in pharmacy. Recipient selected by the dean of the College of Pharmacy and Student Financial Assistance and Employment Services.

**Lois Vars Scholarship:** Income from endowment for a scholarship awarded annually in the fall to a female pharmacy student who is a transfer in her third year and is at least 28 years old.

**Wal-Mart Pharmacy Scholarship:** Grant awarded annually to students in pharmacy. Recipient selected by the dean of the College of Pharmacy.

**Leonard R. Worthen Scholarship in Pharmacy:** Income from endowment for a scholarship in pharmacy.

**Heber W. Youngken Jr. Scholarship:** Income from endowment awarded annually to a student in the fourth- or fifth-year class who has demonstrated outstanding service in the interests of pharmacy at the state and/or national level. Recipient selected by the College of Pharmacy.

**Kevin J. Zecco Memorial Scholarship:** Income from endowment for a scholarship awarded annually to fourth-year students in the College of Pharmacy with an academic average of 2.50 to 3.50 and demonstrated financial need. The student must be of good moral character and have the persistence and dedication to pursue an entry-level degree in pharmacy. Recipient selected by the dean of the College of Pharmacy and Student Financial Assistance and Employment Services.

## SPECIAL AWARDS

**\*Academy of American Poets Prize:** Income from the Nancy Potter Endowment for two \$100 prizes to be awarded each year by the Academy of American Poets.

**Dennis W. Callaghan Memorial Award in Management:** Income from endowment awarded annually to the outstanding senior in management. Selection made by the College of Business Administration.

**Dr. David J. Chronley Fund in Chemical Engineering:** Income from endowment for annual creativity awards for junior or senior undergraduate students in chemical engineering. Awarded at the discretion of the department chairperson.

**\*James Corless Prize in Marine Chemistry:** Income from endowment for an award in water chemistry given annually if there is a worthy student.

**Lt. Parker D. Cramer '59 Memorial Endowment:** Income from endowment for an annual award (a saber) to outstanding students in Reserve Officers Training Corps (ROTC) having leadership qualities and high ethical standards. Selection made by the Department of Military Science.

**\*Ann Durbin Memorial Endowment:** Income from endowment for an award to a graduate student, either master's or Ph.D. candidate, in biological oceanography. Recipient selected by the Graduate School of Oceanography.

**\*John J. Fisher Memorial Award:** Income from endowment for an annual award in geology to a graduate assistant (either teaching or research) who has demonstrated superior service to the Department of Geology during the current academic year while maintaining a strong academic record.

**John B. Fraleigh Prizes in Mathematics:** Income from endowment for prizes awarded annually to undergraduates for excellence in mathematics. Selection made by the Department of Mathematics.

**Peter M. and Mildred J. Galanti Award:** Income from endowment for an award given annually to a deserving student in business administration.

**Elizabeth Holmes Outstanding Athlete Award:** Income from endowment for two awards presented annually to outstanding athletes, one male and one female, who possess good academic averages and exemplify the character, sportsmanship, and distinguished qualities URI desires in its athletes. Recipients selected from recommendations made by coaches, with final selection made by the Holmes family.

**Joseph Waite Ince Prize in Chemistry:** Income from endowment for a prize awarded annually to the most accomplished and promising chemistry student.

**David Ketner Memorial Prize:** Income from endowment for prize(s) to art students established in the memory of David D. Ketner, former URI professor of art.

**Dr. Nicholas Locascio Prizes in Italian:** Income from endowment for prizes in Italian. Recipient selected by the Italian section of the Department of Modern and Classical Languages and Literatures.

**\*Peter Merenda Prize for Excellence in Statistics and Research Methodology:** \$1,500 to a finishing Ph.D. student in the Department of Psychology for excellent academic performance.

**William D. and Clarice Metz Scholarship:** Income from endowment for an award given annually to a graduating senior for excellence in history.

**\*L. Douglas Nolan '52 Academic Achievement Award in Science:** Income from endowment for awards given annually to worthy graduate students who excel in one of the natural, physical, biological, agricultural, oceanographic, veterinary, or medical sciences. Selection made by the dean of the Graduate School.

**\*William C. Potter Prizes in Chemistry:** Income from endowment for an award given annually to Ph.D. students in pharmacy on the basis of academic achievement in chemistry.

**Rhode Island Association of Advertising Agencies Award:** Income from endowment for an award to outstanding advertising and/or marketing students in the College of Business Administration.

**Rhode Island Nurserymen's Association Award:** \$150 awarded annually to a student in an advanced course in landscape design who attains the highest score in competitive examination in plant identification. Award presented at the association's annual spring meeting. Selection made by the College of the Environment and Life Sciences.

**Rhode Island Tuberculosis and Respiratory Disease Association Award:** \$1,000 awarded annually in honor of the association's former president, Harry L. Gardner, to a senior accepted by an accredited medical school. Based on need. Apply to chairperson of the Premedical Advisory Committee.

**Italo and Mary Ronzio Award:** Income from endowment for an award in Italian language studies.

**Dr. Grace B. Sherrer Honors Awards:** Income from endowment for prizes awarded annually to outstanding undergraduates enrolled in the Honors Program.

**Leonard Eckerman Smith Memorial Award in Public Speaking:** Income from endowment awarded to students at the University with a major interest in public speaking, based on excellence in public speaking.

**Gertrude Spencer Award:** Income from endowment for annual awards to English majors who demonstrate excellent command of the English language as shown by either fictional or non-fictional written work. This award is based on merit alone.

**A. Ralph Thompson Award in Chemical Engineering:** Income from endowment for an annual award to the student in chemical engineering who demonstrates the greatest increase in grade point average from the end of the freshman year to the end of the junior year.

**\*Norman Watkins Memorial Award:** Income from endowment for an annual award in physical oceanography. Recipients selected by the Graduate School of Oceanography.

**Richard Dawson Wood Memorial Award for Excellence in Biological Sciences:** Income from endowment awarded on the basis of scholarship, character, academic integrity, and intellectual enthusiasm to a senior entering graduate studies in biological sciences. In addition, an independent research paper on a project previously discussed with a faculty member in biological sciences must be submitted by April 30 of the senior year.

**Dr. Barbara Allen Woods Memorial Award for Excellence in German Studies:** Students selected by faculty members in the German section of the Department of Modern and Classical Languages and Literatures.